

UNITED STATES DISTRICT COURT
SOUTHERN DISTRICT OF NEW YORK

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IN RE M/V MSC FLAMINIA : 12-cv-8892 (KBF)
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OPINION & ORDER

KATHERINE B. FORREST, District Judge:

This is the second of two decisions in the above, large maritime matter that together set forth this Court’s liability determinations.

On July 14, 2012, the M/V MSC FLAMINIA (the “Flaminia”) was crossing the Atlantic Ocean bound for Antwerp, Belgium. The vessel had departed from New Orleans, Louisiana fourteen days earlier and was loaded with cargo. Early on the morning of July 14, alarms began to sound; a smoky cloud rose from one of the holds; and an explosion followed shortly thereafter. The Court previously found that the explosion was the result of runaway auto-polymerization of cargo consisting of 80% grade divinylbenze (“DVB80”), stowed in one of the holds. See In re M/V MSC FLAMINIA, No. 12-cv-8892 (KBF), 2018 WL 526549 (S.D.N.Y. Jan. 23, 2018) (ECF No. 1447, Corrected Opinion & Order dated January 23, 2018) (hereinafter, “Flaminia Phase I Opinion”); In re M/V MSC FLAMINIA, No. 12-cv-8892 (KBF), 2017 WL 5514525 (S.D.N.Y. Nov. 17, 2017) (ECF No. 1407, Opinion & Order dated November 17, 2017). As a result of the explosion and a fire, three members of the crew were killed, thousands of cargo containers were destroyed, and

the vessel was seriously damaged. A number of lawsuits followed, seeking compensation for, inter alia, death, bodily injury, loss of cargo, damage to the vessel, and for contribution and indemnification. Many of the original claims have been resolved, including those alleging wrongful death and bodily injury. The remaining claims are based on theories of negligence, statutory violations, and breaches of contractual obligations.

I. PROCEDURAL HISTORY

Due to the complexity of issues to be decided, and anticipated duration of a single proceeding, the Court divided the trial into phases: a “Phase I” trial that determined the cause of the explosion; and a “Phase II” trial to establish responsibilities. (See ECF Nos. 872, 874, 885.) A “Phase III” trial will follow if an upcoming mediation process does not resolve the remaining damage issues. (See id.) The Court presided over the Phase I bench trial from September 11, 2017, through September 19, 2017, with closing arguments on September 26, 2017. See Flaminia Phase I Opinion, 2018 WL 52649, at *1. It issued its initial decision on what caused the explosion on November 17, 2017, and a corrected decision on January 23, 2018. See id. From August 13, 2018, through August 29, 2018, the Court presided over the Phase II trial that is the subject of this Opinion & Order.

In Phase I, the Court made factual findings relating to the cause of the explosion aboard the Flaminia. The Court found that auto-polymerized DVB80, a chemical contained in a container aboard the Flaminia, ignited by a spark, caused

the explosion and fire. Id. at *30-31. More specifically, the Court found the following facts relevant to this Phase II proceeding:

- The DVB80 was delivered to the New Orleans Terminal (“NOT”) in an appropriately oxygenated state. Id. at *2.
- The manufacturer of the DVB80, Deltech Corporation (“Deltech”), made a fateful choice to ship this cargo out of NOT in June. Id.
- Together, stagnant storage under a hot sun at NOT, followed by high ambient temperatures in the hold (“Hold 4”) of the *Flaminia*, caused the DVB80 to auto-polymerize. Id.
- Containers of heated diphenylamine (“DPA”), adjacent to those filled with DVB80 at NOT and in Hold 4, was a substantial contributing factor to the auto-polymerization. Id.
- After alarms sounded aboard the *Flaminia* on the morning of July 14, 2012, the crew missed a final opportunity to prevent the explosion when, lacking information as to the cause or conditions in Hold 4 (namely that the DVB80 had auto-polymerized and created a smoky vapor cloud) and instructions as to how much carbon dioxide (“CO₂”) to release to meet those actual (gas) conditions, it failed to release sufficient CO₂ to inert venting gases. Id.
- The crew’s reasonable response to what they believed was an ongoing fire (not a smoky gas vapor cloud) created a spark that triggered the explosion. See id.

- Dr. Scott G. Davis (an expert on gas explosions whose testimony in this regard the Court credited) concluded that the DVB80 would not have auto-polymerized if (1) it had not sat still in the sun at NOT; (2) it had not been stored next to the DPA both at the terminal and in Hold 4; and (3) Hold 4 had been ventilated and not had high ambient temperatures. Davis also concluded that additional CO₂ could have rendered the gas inert and that an ignition event (such as a spark) was necessary to trigger the explosion. Id. at *4.
- Dr. Hans Fauske (also an expert who testified in Phase I) performed useful modelling showing that under normal conditions, DVB80 manufactured according to the same process as that aboard the Flaminia should not have auto-polymerized for 64.9 days. Id. at *6.

Based on these and related findings, the Court found the following substantially contributed to the DVB80's auto-polymerization:

- “The decision to ship the DVB80 out of NOT, which necessitated a longer voyage than would have a more northeastern port and exposed it to undesirable conditions;
- “The fact that the DVB80 was left still on the dock at NOT for 10 days in the sun, in hot weather, and next to a number of tanks of heated DPA;

- “The placement of the DVB80 in Hold 4, where it was stored next to containers of heated DPA and near the ship’s heated fuel tanks;
and
- “The lack of proper ventilation, leading to hotter-than-typical ambient temperatures in Hold 4.”

Id. at *30-31.

II. OVERVIEW OF THE PARTIES’ CLAIMS

It is easy to lose oneself in the thicket of claims, cross claims, and counterclaims asserted by an array of parties. However, this Court’s factual findings herein render much of this legal positioning irrelevant. As the Court finds that only Deltech and Stolt Tank Containers B.V. (“Stolt”) bear responsibility, many legal arguments simply do not matter.

For the sake of the convenience and the sanity of the reader, the Court summarizes the relevant claims and defenses. Claims for lost cargo (the “Cargo Claims”), have been asserted against MSC Mediterranean Shipping Company, S.A. (“MSC”); Conti 11. Container Schiffahrts-GMBH & Co. KG MSC “Flaminia” (“Conti”); and NSB Niederelbe Schifffahrtsgesellschaft MBH & Co. KG (“NSB”). The Carriage of Goods by Sea Act (“COGSA”), 46 U.S.C. § 30701 (note), applies to such claims either by contract or force of law; the relevant contracts are the terms and conditions of the MSC bills of lading and/or sea waybills under which various cargoes were carried aboard the vessel.

A number of parties have asserted tort claims based on theories including general negligence, negligent failure to warn, and strict liability. In this regard, NSB has asserted tort claims against MSC, Deltech, Stolt, and Chemtura Corporation (“Chemtura”); Conti has asserted tort claims against Deltech, Stolt, and Chemtura; Deltech and Stolt have asserted tort claims against MSC,¹ Chemtura, and NSB.

Additionally, two contract claims are at issue: MSC has asserted contract claims against Deltech and Stolt under the operative Sea Waybills and under a Service Contract it has with Stolt; and Stolt has asserted a contract claim against BDP.²

Conti has also asserted a “General Average” claim against all parties³ (ECF Nos. 131, 133); NSB has asserted claims for negligence, indemnity, and contribution

¹ MSC disputes that Deltech and Stolt may even assert tort claims against it as they both are in privity of contract with MSC. For their part, Deltech and Stolt assert that at the very least they may proceed with negligence claims for non-cargo losses. Conti has asserted non-cargo claims against MSC that are being litigated in an arbitration proceeding in London. Conti is not seeking recovery directly from MSC here but is involved in an arbitration proceeding in London.

² As a result of a prior decision by this Court, this claim is limited to a breach of contract by BDP that deprived Stolt of a defense it might have then been able to assert in its own defense. See In re M/V MSC FLAMINIA, No. 12-cv-8892 (KBF), 2017 WL 3738726 (S.D.N.Y. Aug. 30, 2017) (ECF No. 1331, Corrected Opinion & Order dated August 30, 2017) (hereinafter, “Flaminia BDP/Stolt Opinion”). Conti and NSB initially brought breach of contract claims against Stolt and Deltech. (See ECF No. 127, Conti and NSB’s Countercls. against Deltech and Stolt ¶¶ 32-38.) However, the Court does not address these claims separately because Conti and NSB did not specifically address them in their pre-and post-trial submissions and, moreover, because any such analysis would duplicate the below discussion of their indemnification claim against Stolt and Deltech.

³ A “General Average” claim is in the nature of a contract claim based on a bill of lading. Here, Conti’s General Average claim is based on Clause 22 of the MSC bill of lading.

against MSC (ECF Nos. 108, 130). Conti and NSB have together asserted claims against Chemtura,⁴ Stolt, and Deltech for strict liability for failure to warn, negligent failure to warn, general negligence, negligent misrepresentation,⁵ and indemnity.

The defenses available to certain parties are equally complicated. Conti, as the owner of the vessel, and NSB, as ship manager, assert entitlement to various defenses. First, they assert a defense under the Limitation of Shipowner's Liability Act (the "Limitation Act"). 46 U.S.C. §§ 30501-30512; 3 Benedict on Admiralty § 12 (7th ed. 2018). The Limitation Act's "Fire Statute" specifically exonerates—rather than merely limits—a shipowner and ship manager from liability as to loss or damage to cargo caused by fire on board its vessel unless the fire was caused by the "design or the neglect of the owner." 46 U.S.C. § 30504. In addition, COGSA (the exclusive remedy for a cargo claimant against a carrier, see 46 U.S.C. § 30701 (note); Rationis Enterprises Inc. of Panama v. Hyundai Mipo Dockyard Co., 426 F.3d 580, 587 (2d Cir. 2005)) contains a "Fire Exception" in Section 4(2)(b). This section provides an additional basis for exoneration when the fire does not result from the actual fault of the shipowner or ship manager and is not caused by privity with the carrier.⁶ Finally, the provisions of the bill of lading may (and here do)

⁴ These claims were also initially asserted against Bulkhaul (USA) Inc., but that entity has been dismissed from this litigation.

⁵ The negligence misrepresentation claim has not been pursued and the Court considers it abandoned in favor of other claims.

⁶ To get around these Limitations Act or COGSA defenses, the "design or neglect" or "actual fault or privity" must be at a managerial level. See Sunkist Growers, Inc. v. Adelaide

contractually extend the defenses and limitations of liability provided to a carrier under COGSA to an agent of the carrier (including here the shipowner and ship manager, here, Conti and NSB), through what is known as the “Himalaya Clause.” Mikinberg v. Baltic S.S. Co., 988 F.2d 327, 332 (2d Cir. 1993). MSC’s bill of lading included a Himalaya Clause in Clause 4.2.

As discussed in the findings below, the Court specifically finds that the fire aboard the *Flaminia* was not caused by the design or neglect of the owner.

III. THE PHASE II TRIAL: SUMMARY OF FINDINGS

Following a bench trial at which the Court received evidence from a total of 82 witnesses (24 live; 2 by trial declaration only (cross-examination waived); and 56 by deposition designation) and reviewed hundreds of documents as evidence (see ECF No. 1540), this Court has now made final liability determinations. The Court has considered the extent to which the following parties may bear responsibility for the explosion and loss: Deltech, the manufacturer of the DVB80 that auto-polymerized; Stolt, the entity that booked transport aboard the *Flaminia* and was responsible for trucking the DVB to NOT; BDP, Stolt’s Documentation Department;

Shipping Lines, Ltd., 603 F.2d 1327, 1336 (9th Cir. 1979). As discussed below, the Court does not find that any act or omission by Conti or NSB proximately caused any loss that occurred, let alone loss that is attributable to someone with managerial authority. The burden of demonstrating managerial authority is borne by the party seeking to overcome these defenses.

MSC, the ocean carrier; Conti, the owner of the vessel; NSB, its operators; and Chemtura, the manufacturer of the DPA cargo.

In sum, and first with regard to the negligence claims, the Court has determined that Deltech is most responsible: It is strictly liable for the loss, and has breached its duty to warn; it is also liable under theories of general negligence and breach of contract. Most importantly, contrary to their own safety protocols developed after prior polymerization incidents that determined that shipping DVB out of New Orleans should be avoided in warmer months, Deltech booked the shipment of DVB80 out of New Orleans for late June. This fateful decision was the result of—at the very least—a combination of a considered decision at the highest levels of Deltech and managerial errors that followed. The impact of this decision was immediately compounded by another decision by Deltech: authorizing the ISO containers with the DVB80 (“Tanks I, J, and K”) to be filled several days earlier than necessary, resulting in the containers sitting stagnant in the hot New Orleans sun (at ambient temperatures that reasonably should have been anticipated to have exceeded the recommended 30°C (85°F)⁷) for several days longer than necessary. These two decisions most directly led to the auto-polymerization. While it is true that other factors contributed, these decisions were by far the most critical. Deltech therefore bears significant responsibility for the losses flowing from the explosion.

⁷ Certain Deltech documentation specifies that DVB80 should not be loaded onto an ocean-going vessel at the even lower temperature of 27°C (80.6°F). (See, e.g., ECF No. 1485-39, DX 46_004.)

To the extent proportionality is relevant to later damage calculations, the Court assigns Deltech's portion of liability for these events as 55% of the total.

Stolt, Deltech's non-vessel operating common carrier ("NVOCC") is also strictly liable, breached its duty to warn, and is liable under principles of general negligence and for breaches of contractual obligations. Stolt possessed extensive information regarding the heat sensitive nature of the DVB yet it: (1) failed to pass information to the ocean carrier, MSC, in an effective manner regarding the dangers of heat exposure to the particular cargo in Tanks I, J, and K; and (2) was responsible for arranging loading the DVB into ISO containers earlier than it should have, and arranging for those to be transported to NOT and deposited in the open air at the terminal, even though it had a reasonable basis to anticipate that the Tanks would sit stagnant for a number of days. Stolt's actions were a significant contributor to the conditions that allowed for additional heating of the DVB and thus the conditions that led to auto-polymerization. Again, to the extent that proportionality is relevant, the Court assigns Stolt 45% of the responsibility for these events.

BDP, Stolt's Documentation Department, is not at fault here. It is true that BDP was under a contractual obligation to Stolt to ensure certain information was contained on the Master Bill of Lading Instructions, and that it failed to do so. However, the evidence at trial established that this breach did not contribute to the loss; it led to no damage. The Court is persuaded that despite Stolt's ex-post arguments to the contrary, no participant in the chain of events would have acted

on the information BDP failed to include. Accordingly, BDP did not deprive Stolt of any real defense.

MSC, the ocean carrier, is also not liable for the loss. Although MSC also possessed substantial information regarding the heat sensitive nature of DVB before the Flaminia voyage, it lacked sufficient information that Tanks I, J, and K not only contained a heat sensitive product, but—very importantly—had already been exposed to conditions that transformed them into ticking time bombs. MSC's actions were consistent with industry practice, its prior practices, and the reasonable (versus unreasonable) expectations of the parties. Stolt and Deltech are incorrect in their positions that (1) generalized knowledge MSC possessed regarding DVB's heat sensitive nature eliminates Stolt's responsibility to effectively warn MSC about known dangers for these particular ISO containers (out of thousands upon thousands of cargo containers it was carrying) or shifts the burden to MSC,⁸ and (2) MSC was "keeping" information it possessed in Antwerp from those in the United States who needed it to properly handle the cargo here at issue. In fact, there was a specific, industry-accepted manner of conveying necessary information regarding safe handling of dangerous goods: a "Dangerous Goods Declaration" ("DGD") that Stolt did not effectively utilize. In addition, MSC's stowage plan was consistent with industry practice and reasonable under normal circumstances. Finally, the actions of the personnel at NOT pre-loading (stowing the DVB80 tanks

⁸ Indeed, this would create odd incentives and burden shifting between shippers and carriers of dangerous goods.

in the open air and near similarly classed cargo in the terminal yard) were also routine and consistent with its own prior practice as well as industry practice.

The vessel owner (Conti) and its operator (NSB) also bear no responsibility for losses resulting from the explosion. Conti provided a seaworthy vessel. NSB had appropriately trained crew; its decision making regarding the venting of Hold 4 was appropriate; its CO₂ system was adequate and deployed in a reasonable manner; opening the manlid was a reasonable, on-the-scene response to developing or expected conditions; and ignition of a gaseous cloud by such act was not a reasonably foreseeable result.

Finally, the Court finds that Chemtura, the entity that shipped DPA cargo stowed close to the DVB, bears no responsibility for any losses. Chemtura's DPA was delivered in good condition and Chemtura acted entirely appropriately and according to what was reasonably expected in light of the foreseeable results of its actions. It was not reasonably foreseeable to Chemtura that its DPA would be stored next to DVB that had, in violation of its own manufacturer's shipping protocols, been loaded early, delivered to an open air position at NOT, and sat there for days longer than it should have. While, as this Court has previously found, the DPA was, to some extent, a contributing heat source to the auto-polymerization, the Court finds that the DPA cargo was properly labelled (and need not, for instance, have been placarded with a red thermometer or described as "molten").

In addition to these liability issues, Stolt and Deltech have separately asserted claims for indemnification and contribution against MSC. The Court finds

that the contractual arrangement between Stolt and MSC ultimately leaves financial responsibility for the cargo loss with Stolt and Deltech.

IV. FINDINGS OF FACT⁹

The Court's prior Opinion & Order sets forth the chemical properties of DVB80, so they will not be repeated in detail. For convenience, the Court sets forth limited facts from that Opinion relevant to its decisions in Phase II, and then proceeds to its new findings.

DVB80 is a monomer that, depending on exposure conditions, can undergo heat-initiated polymerization. Flaminia Phase I Opinion, 2018 WL 526549, at *8. Once polymerization starts, the process generates its own heat which results in additional polymer formation. Thus, once begun, the polymerization process is self-sustaining. This gives rise to auto-polymerization. Id. Polymerizing DVB is unstable and potentially dangerous. Customers order DVB in its monomer form; polymerized DVB is undesirable and potentially quite dangerous. Id.

During the process of polymerization a white, smoky cloud of gas may be emitted. Id. This cloud can resemble smoke from a fire. If exposed to an ignition source and a specific amount of oxygen, the DVB gas may explode.

A combination of a chemical inhibitor, p-tert butylcatechol ("TBC") and oxygen, halt polymerization. Id. During the manufacturing process, Deltech adds

⁹ The Court makes its findings of fact by a preponderance of the credible evidence. This Opinion contains exemplar citations to evidence. The Court has not attempted to exhaustively recite all supportive citations.

TBC to the DVB liquid to inhibit polymerization. It also ensures consistent and adequate oxygenation. The induction time or shelf-life of DVB liquid is the time it takes to deplete the TBC and oxygen below a threshold level, allowing auto-polymerization to commence. Id. The temperature of the DVB liquid dictates the consumption rate of the TBC and oxygen. In addition, DVB80 will not ignite unless heated to between 69 and 76.7°C (156°F and 170°F). To ignite the DVB80, vapor and air (oxygen) must be within narrow limits: the DVB80 vapor can only be between 1.1% and 6.2% of the combined vapor/air mixture. Even when these conditions are met, an external ignition source is needed. During Phase I, the Court was persuaded that when the crew lifted the lid covering the access point (the “manlid”) to Hold 4 as part of its response to fire alarms in order to insert a hose, resulting friction created a spark. Id. at *9.

Once manufactured, DVB80 is then filled into containers (“ISO containers”) for transport.¹⁰ During the filling process, the temperature of the DVB80 is monitored (by insertion of a thermometer into the liquid) to ensure the liquid is appropriately chilled; such monitoring occurred here. Id. at *11-12. Moreover, TBC inhibitor levels and liquid polymer content are checked, and were here. Id. at 11. No deficiencies in Deltech’s manufacturing process or physical loading of the DVB80 ISO containers at issue here (Tanks I, J, and K) occurred. Id. at 11-12. The Court

¹⁰ There is a thermometer on the lower portion of the rear exterior of the tank. See Flaminia Phase I Opinion, No. 12-cv-8892 (KBF), 2018 WL 526549, at *11 (S.D.N.Y. Jan. 23, 2018).

found “under normal transit time and temperature conditions,” the DVB80 would have arrived safely in Antwerp. Id. at 12. Here, however, normal overall transit times (inclusive of time at the terminal) and temperature were exceeded.

Deltech had experienced two prior auto-polymerization incidents in connection with overseas shipments, both in 2006. The circumstances of these incidents are set forth in the Court’s Flaminia Phase I Opinion. Following these incidents, Deltech changed its manufacturing and shipping procedures. The relevant changes to the shipping procedures are discussed in detail below. Deltech has made hundreds of overseas shipments of DVB since 2006, and the only shipment that has undergone runaway polymerization on board a vessel was the shipment aboard the *Flaminia* in July 2012.¹¹

As the Court previously found, Deltech uses several ports and routes for shipping overseas and a voyage from NOT to Antwerp is the longest. Id. at *19. As of 2006, Deltech understood that time-to-destination and temperature exposure conditions risked DVB’s stability. Id. Indeed, the maximum number of days in transit from NOT to Antwerp is 31 days, with a median of 16; from Newark, the maximum days in transit is 13 days with a median of 9.5. Id. at *20. As discussed

¹¹ The Court also previously found that the two prior 2006 auto-polymerization incidents—the so-called “Chauny” and “Grangemouth” incidents—were useful in understanding what occurred aboard the *Flaminia*. Most notably, the Chauny ISO containers sat on a dock in Houston from July 4 to July 15, 2006, that is, two days longer than Tanks I, J, and K for the *Flaminia*; but there was no evidence that those tanks sat next to ISO containers of DPA or were exposed to the other particular conditions here. The voyages were otherwise of similar duration. The Grangemouth tanks sat at NOT for 11 days, that is, one day longer than Tanks I, J, and K, but again there was no evidence that those tanks sat next to DPA cargo or were exposed to the other particular conditions here.

below, in March 2012, Deltech personnel were consulted about shipping DVB80 from NOT to Antwerp. Deltech's Eugene Fluharty, Operations Manager and Vice President of Manufacturing, stated that due to the exposure time, he did not support such a decision, and clearly indicated that shipping out of Newark was safer. Id.

In its prior decisions, this Court found that because Tanks I, J, and K shipped out of NOT, they sat at the terminal in the hot New Orleans sun for 10 days, substantially contributing to the July 14 auto-polymerization incident. Id. at *22.

Deltech protocols clearly indicated that the temperature of DVB should not exceed 27°C (or 80.6°F) for safe shipping. (See, e.g., ECF No. 1485-39, DX 46_004.) Nevertheless, during the time Tanks I, J, and K were at NOT, daytime temperatures reached 33.3°C (92°F) with an average temperature of 29.4°C (85°F). For four days (June 26, 27, 28, and 29), daily temperatures reached 35.5°C to 36.6°C (96°F to 98°F). Flaminia Phase I Opinion, 2018 WL 526549, at *21. At NOT, the physical placement of Tanks I, J, and K at the terminal also exposed them to thermal radiation from the adjacent DPA containers. Id. at *22. The DPA had arrived at NOT in a liquid state with an internal temperature above 53°C (127°F). The DPA was also in ISO containers exposed to solar and radiative heat. Id.

In the Court's Flaminia Phase I Opinion, the Court also reviewed the stowage aboard the Flaminia. ISO containers of DPA and DVB were stored adjacent to one another in Hold 4. Hold 4 was also straddled by wing tanks with heated fuel oil. Id.

at *24. The Hold also had mechanical exhaust fans that operated when vents were open. (ECF No. 1471, Moeller Trial Decl., p. 19 ¶ 81.) But during the Flaminia voyage, the vents were closed. Flaminia Phase I Opinion, 2018 WL 526549, at *26.

During the Flaminia's voyage, outside air temperatures were generally in the 80s, that is, above 27°C (80.6°F) with one day in the 15s (60s) (July 12) and a few days in the 20s (70s) (July 10, 11, and 13). The average daily temperature during the Flaminia's voyage was higher than for the five previous trans-Atlantic DVB shipments. Id. at *25.

By July 14, Tanks I, J, and K had been in transit for 23 days—already beyond Deltech's preferred transit time—and for a number of days, the cargo had been exposed to temperatures that exceeded the recommended maximum and were well over 27°C (80.6°F). Id. In addition, the average temperatures in Hold 4 were higher than normal.¹² Id. at *25-26.

The Court also previously found that following the alarms on July 14, 2012, opening the manlid allowed more oxygen into the hold, which likely brought the DVB80 vapors within the narrow concentration range (1.1-6.2%) that allowed it to ignite, and a friction spark in fact ignited the vapors. Id. at *29-30.

¹² Deltech's President, Robert Elefante, testified that he expected that, if the DVB was not stowed above deck, it would be stowed in a vented hold as his understanding was that "all vessels are ventilated." (ECF No. 1583, Elefante Trial Test., p. 206-07.) However, he lacked a factual basis for this assumption, as not all holds are ventilated.

A. Regulatory Schemes

There are three interwoven regulatory schemes relevant to the ocean shipment of dangerous goods and to this decision: the Hazardous Materials Code (“HMR”), 49 C.F.R. Parts 100-185 (promulgated pursuant to the Hazardous Materials Transportation Act (“HMTA”), 49 U.S.C. § 5101, see 49 U.S.C. § 5103); the International Maritime Dangerous Goods (“IMDG”) Code (adopted in the United States, see In re M/V DG Harmony, 533 F.3d 83, 88-89 (2d Cir. 2008)); and the Safety of Life at Sea Convention (“SOLAS”), Nov. 1, 1974, 32 U.S.T. 47 (which the United States has ratified, see Alkmeon Naviera, S.A. v. M/V Marina L, 633 F.2d 789, 793 (9th Cir. 1980)).

According to SOLAS, there is an obligation to provide “appropriate information on the cargo sufficiently in advance of loading to enable the precautions which may be necessary for the proper stowage and safe carriage of the cargo to be put into effect.” SOLAS, Ch. VI, Reg. 2.1 (5th ed. 2009). SOLAS further provides that “[s]uch information shall be confirmed in writing and by appropriate shipping documents prior to loading the cargo on the ship.” Id. The “appropriate information” is defined as including “any relevant special properties of the cargo” as well as “all necessary information about the cargo to enable to shipowner or ship operator to ensure that . . . the cargo can be safely stowed and secured on board the ship and transported under all expected conditions during the intended voyage.” Id. at Reg. 2.2.1. In most instances, the DGD fulfills these SOLAS requirements. (ECF No. 1484, Daum Trial Decl., p. 8 ¶ 35; ECF No. 1489, Ahlborn Trial Decl., p. 15 ¶

58.) Finally, and crucially, SOLAS provides that the “carriage of dangerous goods in packaged form shall be in compliance with the relevant provisions of the IMDG Code.” SOLAS, Ch. VII, Reg. 3 (5th ed. 2009).

The IMDG Code categorizes all dangerous goods into specific classes that are broadly organized according to the type of risk presented by the goods. There are nine classes. Class 9 is for “miscellaneous and environmentally hazardous substance.” The DVB here was properly classified as a Class 9 substance.

These Classes are further subdivided under the IMDG Code into specific four-digit identifiers known as United Nations numbers (“UN numbers”). Some UN numbers describe a specific chemical compound or substance (UN 1223, for example, is the UN number for kerosene), while other UN numbers describe only a generic type of substance (such as UN 3082, the UN number for any environmentally hazardous substance). (ECF No. 1481, Downey Trial Decl., p. 4 ¶ 16.) DVB80 is properly designated as UN 3082. The combined result of Class and UN number is that many different chemicals may fall under the classification criteria that is used for the DVB here: Class 9, UN 3082 substance.

It is appropriate to classify dangerous goods under Class 9, UN 3082, if such goods do not present dangers covered by any of the other classes. (ECF No. 489, Ahlborn Trial Decl., p. 13 ¶ 48-49.) Thus, when a good is designated as “Class 9, UN 3082,” it is being represented as: not emitting a flammable gas (Class 4.3)¹³; not

¹³ This category is different from a product being capable, under certain conditions, of emitting flammable gas.

being likely to oxidize (Class 5.1) or explode (Class 1); and not being flammable (Class 2.1, Class 3, Class 4.1), corrosive (Class 8), toxic (Class 2.3, Class 6.1), infectious (Class 6.2), radioactive (Class 7), liable to spontaneous combustion (Class 4.2), or self-reactive (Class 4.1). (Id.) The Court is persuaded that under normal, reasonably anticipated conditions, the DVB80 is a Class 9, UN 3082 substance.¹⁴

In addition to this classification system, which is used throughout the transport chain, the IMDG Code sets forth other requirements for the shipping and handling of dangerous goods.¹⁵ Under IMDG Code 1.13, a dangerous good forbidden from shipment is:

Any substance or article which, as presented for transport, is liable to explode, dangerously react, produce a flame or dangerous evolution of heat or dangerous emission of toxic, corrosive or flammable gases or vapors under normal conditions of transport.

Under IMDG Code 3.1.1.5, certain substances, including polymerizing substances, may be forbidden:

These products shall be sufficiently stabilized to prevent any dangerous reaction during the intended voyage. If this cannot be ensured, the transport of such products is prohibited.

The IMDG Code, however, does not always specify which actors must take the various required actions. According to the resulting regulations, “[a] shipment of hazardous materials that is not prepared in accordance with [the regulations]

¹⁴ Dean Kutz, the Director of Safety, Security & Compliance at MSC, testified that every time MSC shipped DVB, it approved it as a Class 9, UN 3082 substance. (ECF No. 1611, Kutz Trial Test., p. 1280.)

¹⁵ The terms “dangerous goods” and “hazardous goods” are used interchangeably.

may not be offered for transportation by air, highway, rail, or water.” 49 C.F.R. § 173.1(b). The regulations apply to each person who offers or accepts a hazardous material for transportation in commerce. 49 C.F.R. § 171.2. The regulations authorize transportation in accordance with the IMDG Code, 49 C.F.R. § 171.22(a), subject to certain limitations, 49 C.F.R. § 171.22(b), and additional requirements, 49 C.F.R. § 171.25.

Stolt’s position in this litigation is that the IMDG regulations did not require the DGDs it prepared for the DVB cargo here to contain more information than Stolt included. (ECF No. 1488, Cario Trial Decl., p. 8-9 ¶ 28.) This position misses the mark. The IMDG regulations do not define the precise parameters of the standard of care under all conditions. For instance, when dealing with general “Class 9, UN 3082” goods of which there are many possible types, the IMDG Code does not define the limits of what information an NVOCC should provide to a carrier for safe handling.

B. Deltech’s Experience with DVB Prior to June 2012

DVB has known chemical properties and reacts to certain temperature conditions. A great deal of evidence in both Phase I and Phase II trials related to its heat sensitivity. The primary issue with exposure to heat is not auto-ignition, but rather that (as previewed above) heat consumes oxygen and prolonged heat exposure therefore enhances chances of polymerization. Deltech understood that one way to prevent polymerization was to oxygenate and stabilize it through the addition of the TBC inhibitor. Heat exposure, however, not only consumes oxygen,

but also reduces the effectiveness of TBC. A key issue in the safe handling and transport of DVB thus includes careful attention to maximizing the DVB's oxygen and TBC levels at every step. Over the years, and in particular, following the two 2006 auto-polymerization incidents, Deltech developed internal protocols specifically directed at ensuring DVB's safe transport. The development of these protocols, and their violation here, are the first steps in this Court's determination of fault.

As referenced above from the Court's Phase I Opinion & Order, shortly after Deltech had begun shipping DVB to Europe in 2006, it experienced two auto-polymerization incidents: the so-called "Chauny" and "Grangemouth" incidents. During this Phase II trial, the evidence presented largely concerned Deltech's response to these incidents. Following Chauny and Grangemouth, Deltech's President, Robert Elefante, immediately instructed his staff to cease any export shipments pending a full investigation. Deltech then undertook an extensive investigation and made recommendations for enhancements to its manufacturing, filling and shipping methods. (ECF No. 1491, Levine Trial Decl., p. 11-13 ¶¶ 38-45.)

The first piece of formal work product that resulted from Deltech's examination was a February 2007 "DVB Study." (Id. at p. 16-18 ¶¶ 57-64; ECF No. 1491-3, DX 139.) The purpose of the study was to "set the criteria for safe shipping and handling of DVB shipments to Europe." (ECF No. 1491-3, DX 139_003.) It specifically took into consideration temperature exposure on the trip and various shipping routes and stated:

The conclusions are first and foremost directed to the safe handling and storage to prevent any further incidents but also to take into consideration any additional cost that may be required for different options.

(Id.) The report concluded that DVB was temperature sensitive and should be shipped out of the more northerly Port of New York, located in Newark, New Jersey, during the warmer months (and not New Orleans). (Id.) The report also recommended ongoing temperature readings be taken during transport when possible, but specifically recognized that “there will be times when readings are not available.” (Id., DX 139_004.) The report noted:

[W]e have determined that DVB stability is affected by the level of inhibition, temperature and mixing of the material during storage and transportation. The most important factor in all of this is the average temperature of the material, followed closely by the level of inhibition.

(Id., DX 139_005.) The study also noted certain “Transit Time Considerations”:

Especially during the summer time, our objective is to minimize the material’s exposure to heat as well as the time the container is out of our control.

(Id., DX 139_0018.) Deltech received a second “DVB Report” in March 2007. (ECF No. 1491, Levine Trial Decl., p. 18 ¶ 64; ECF No. 1491-4, DX 416.) This report contained additional information on the chemical properties of DVB. Like the earlier report, it stated that “[o]xygen is vital to the ability of TBC to inhibit polymerization.” (ECF No. 1491-4, DX 416_007.) It further stated that:

In our study of DVB we have determined that DVB stability is affected by the level of inhibition, amount of para isomer present, temperature, and mixing of material during storage and transportation. The most important factor in all of this is the average temperature of the material, followed closely by the level of inhibition. The other factors are not nearly as significant.

(Id., DX 416_010.) The report concluded with a series of Shipping and Handling

Recommendations:

DVB has to be handled in a controlled environment where periods without direct care are kept to a minimum typically less than 15-20 days. The 15-20 days is based upon the product being exposed to average daily temperatures in the 75-85 degree F. Should temperatures exceed 85 F then this time without direct care should be shortened.

(Id., DX 416_013.) Additional recommendations included setting up “relay points” during the transport of DVB that were under Deltech’s control, increasing the amount of oxygen in the product before even being loaded (or filled) into ISO containers, and, again, shipping out of certain more northern and cooler ports during the warmer months. (Id., DX 416_014-15.)

The outcome of this investigation led directly to the creation of the first in a series of safety-directed shipping protocols. (ECF No. 1491-9, DX 421.) The first such protocol was issued in September 2007. In particular, and as relevant here, it specifically indicated that in light of DVB’s heat sensitivity, it should be shipped out of the Port of New York (Newark) and not New Orleans during the summer months. Despite revisions to these protocols, twice in 2009 and again in 2011, this basic recommendation never changed. (See ECF No. 1491-11, DX 342; ECF No. 1491-12, DX 343; ECF No. 1491-15, DX 344.) Notably, shipping out of Newark allowed for (1) a cooler port of departure, (2) therefore cooler temperatures preceding vessel loading (e.g., at the terminal), and (3) a shorter ocean voyage. The Court returns to these protocols below in its discussion of the fateful decision to violate them and

ship out of New Orleans and in a manner that guaranteed prolonged heat exposure.¹⁶

C. Overview of the Timeline of Events

The Court sets forth a basic timeline below to enable the reader to understand how important events were ordered.

- March/April 2012: Zachary Levine, Deltech's Vice President of Commercial Operations, and Tatonya Johnson, a Deltech Customer Service Representative, decided to ship DVB out of New Orleans. Deltech's President Robert Elefante approved this decision. (ECF No. 1485, T. Johnson Trial Decl., p. 6 ¶¶ 22-24.)
- June 2012: This decision to allow DVB shipments from New Orleans remained in place through the booking aboard the Flaminia.
- June 8: Deltech sends Stolt its Booking Request for the DVB to be transported to Antwerp through NOT.¹⁷ (ECF No. 1485, T. Johnson

¹⁶ After the 2006 auto-polymerization incidents, Deltech also considered whether it should use refrigerated cargo containers, called "reefers." The evidence at trial supports Deltech's ultimate decision not to use reefers as cost-based. (ECF No. 1603, Levine Trial Test., p. 434-35.) The evidence also supports the conclusion that had reefers been used, the auto-polymerization incident aboard the Flaminia would not have occurred: such a temperature controlled environment would have countered issues relating to shipping out of New Orleans and early loading.

¹⁷ The Booking Requests contained various heat warnings. Each Booking Request stated:

Please secure a booking with temperature monitoring to load DVB 80% for Deltech Corporation. . . .
Temperature Control instructions: "Container to be stowed "in stack" or below deck to avoid exposure to direct sunlight. Do not stow near heat sources." [sic] . . .

Trial Decl., p. 9 ¶ 31; ECF No. 1485-19, DX 360 (Booking Requests).)

- June 11: Stolt sends to Deltech Booking Confirmations for Tanks I, J, and K. In the first version of one of the Booking Confirmations, the document cutoff date was too early (June 18, not the later-used June 25/26), so later the same day, Stolt resends to Deltech the Booking Confirmations.¹⁸ (ECF No. 1485, T. Johnson Trial Decl., p. 13-14 ¶ 48-53; ECF No. 1485-32, DX 362 (initial incorrect Stolt/Deltech Booking Confirmation); ECF No. 1485-33, DX 363 (Stolt/Deltech Booking Confirmation); ECF No. 1485-34, DX 364 (same); ECF No. 1485-35, DX 365 (same).)

Temperature Monitoring: Temperature Gauge must be in perfect order. All temperatures to be reported to Deltech.

1. Formal request to Container Company at time of booking all transit locations until delivery to the customer.
2. If container is greater than 27 C, the Iso-Container cannot be shipped.
3. At Port of Antwerp the iso-container temperature should be monitored:
 - If temperature of iso-container is under 27 C it should be monitored every 24 hours.
 - If temperature of iso-containers is above 27 C it should be monitored every 12 hours.
 - If temperature is 30 C or expected to reach 30 C Deltech should be contacted immediately to arrange to move container immediately to a 'catch and cool facility' that is set up by Deltech.

(ECF No. 1485-19, DX 360_005-360_007.)

¹⁸ These Booking Confirmations did not contain heat warnings. (ECF No. 1485-33, DX 363; ECF No. 1485-34, DX 364; ECF No. 1485-35, DX 365.)

- June 11: Stolt calls MSC to reserve space aboard an MSC vessel. MSC then sends Stolt an MSC Booking Confirmation for each tank.¹⁹ (ECF No. 1479-1, PXs 259, 260, 261 (MSC Booking Confirmations).)
- June 14: Stolt sends a Loading Instruction form to the trucker it will use to transport the DVB to NOT, Boasso Global (“Boasso”).²⁰ (ECF No. 1482-24, DX 459 (Load Instruction).)
- June 20: Stolt sends to MSC Preliminary DGDs for the DVB cargo.²¹ (ECF No. 1479-2, PXs 262, 263, 264 (Initial DGDs).)
- June 20: Deltech’s Tatonya Johnson is out of the office and has emergency surgery. (ECF No. 1485, T. Johnson Trial Decl. p. 18 ¶ 69.)
- June 21: Deltech’s Ortiz, covering for Johnson, seeks her permission to have Tanks I, J, and K filled. Johnson provides authorization and the Tanks are filled. (ECF No. 1485, T. Johnson Trial Decl. p. 20 ¶ 75.)

¹⁹ These MSC Booking Confirmations did not contain any heat warnings. (ECF No. 1479-1, PXs 259, 260, 261 (MSC Booking Confirmations).)

²⁰ The Load Instruction, under “Special Requirements,” provided that a temperature gauge was required. (ECF No. 1482-24, DX 459 (Load Instruction).) Each ISO container for Tanks I, J, and K in fact had a temperature gauge on its exterior.

²¹ These Initial DGDs did not contain any heat warnings. (ECF No. 1479-2, PXs 262, 263, 264 (Initial DGDs).)

- June 21: Stolt's agent, Boasso, brings Tanks I, J, and K to Deltech's Baton Rouge facility for filling with DVB. (ECF No. 1485, T. Johnson Trial Decl. p. 17-18, ¶¶ 65, 68.)
- June 21: Deltech provides the Boasso truck driver with Deltech's Straight Bills of Lading (one for each tank) along with Deltech's Material Safety Data Sheet ("MSDS").²² (ECF No. 1485-28, DX 48

²² The Straight Bills of Lading, under "Special Instructions," state: "SEE ATTACHED MATERIAL SAFETY DATA SHEET FOR EMERGENCY RESPONSE INFORMATION. PRODUCT IS HEAT SENSITIVE! DO NOT APPLY HEAT TO CONVEYANCE DURING TRANSIT. IF PRODUCT TEMPERATURE EXCEEDS 100°F, CONTACT DELTECH IMMEDIATELY"

The MSDS state provided various warnings:

- Combustible: Hot vapors are very flammable and are heavier than air. Vapors may travel considerable distances to ignition sources and cause flash fires or explosions.
- Closed containers of DVB (80%) may build up explosive pressures when exposed to the heat of fires. Closed containers of DVB (80%) exposed to heat may begin to polymerize in an exothermic manner leading to auto acceleration and rapid pressure increase and explosion potential.
- Store in a cool area or refrigerated tank away from high temperatures, hot pipes or direct sunlight.
- Use local ventilation to maintain airborne concentrations below exposure limits. Use at elevated temperatures will increase the abundance of vapors. Use only with adequate ventilation.
- Stable under recommended storage conditions. Inhibited with tertiary-butylcatechol (TBC). Maintain temperature below 80°F (27°C).
- Avoid excessive heat and keep away from open flames or ignition sources. Avoid deadheaded pumps while transferring.
- Polymerization may occur if material is exposed to excessive heat or catalyzed by mixture with incompatible materials. Hazardous polymerization may occur in the absence of air or if inhibitor levels are not maintained. Polymerization is exothermic and may result in auto acceleration, rapid temperature rise, increased pressure, vigorous venting of container, and fire or explosion if not arrested.

(Straight Bill of Lading for Tank I); ECF No. 1485-29, DX 49 (for Tank J); ECF NO. 1485-30, DX 50 (for Tank K); ECF No. 1485-39, DX 46 (MSDS).)

- June 21: Boasso delivers Tanks I, J, and K to NOT and gives NOT Deltech's Straight Bills of Lading (with the attached MSDS).
- June 21: Deltech sends the Deltech Express Bill of Lading Instructions to Panalpina, the freight forwarder working on behalf of Deltech and Stolt.²³ (ECF No. 1485-42, DX 367_002, _006, _010 (Deltech Express Bill of Lading Instructions).)
- June 22: Panalpina, the freight forwarder working on behalf of Deltech, sends to BDP, Stolt, and Deltech the Panalpina Master Ocean Bill of Lading Instructions.²⁴ (ECF No. 1485-43, DX 368 (Freight Prepaid Express Bill of Lading); ECF No. 1485-44, DX 369 (same); ECF No. 1485-45, DX 370 (same).)

²³ The Deltech Express Bill of Lading Instructions provided the following heat warning: "SHOW TEMPERATURE CONTROL INSTRUCTIONS ON OCEAN BOL: 'DO NOT STOW NEAR HEAT SOURCES. STOW ABOVE DECK FOR TEMPERATURE MONITORING.'" (ECF No. 1485-42, DX 367_002, _006, _010.)

²⁴ The Panalpina Master Bill of Lading Instructions provided the following heat warning: "DO NOT STOW NEAR HEAT SOURCES. STOW ABOVE DECK FOR TEMPERATURE MONITORING." (ECF No. 1485-43, DX 368; ECF No. 1485-44, DX 369; ECF No. 1485-45, DX 370.)

- June 25: BDP for Stolt sends to MSC the BDP/Stolt Master Bill of Lading Instructions (“Master Bill of Lading Instructions”).²⁵ (ECF No. 1493-15, DXs 469-471 (Master Bill of Lading Instructions).)
- June 25: MSC uses the Master Bill of Lading Instructions to generate its Draft MSC Sea Waybills.
- June 25: MSC sends its Draft MSC Sea Waybill and MSC Freight Invoice for Tank J back to BDP.²⁶ (ECF No. 976-66, DX 475 (Draft MSC Sea Waybills and Freight Invoices).)
- June 26: Stolt sends to MSC the Final DGDs.²⁷ (ECF No. 1479-3, PXs 265, 266, 267 (Final DGDs).)
- June 26, 4 pm: Vessel document cutoff date. (See ECF No. 1485-33, DX 363 (Stolt/Deltech Booking Confirmation); ECF No. 1485-34, DX 364 (same); ECF No. 1485-35, DX 365 (same).)
- June 27: MSC sends the Draft MSC Sea Waybills and MSC Freight Invoices for Tanks I and K back to BDP.²⁸ (ECF No. 976-66, DX 475 (Draft MSC Sea Waybills and Freight Invoices).)

²⁵ The Master Bill of Lading Instructions provided the following heat warning: “DO NOT STOW NEAR HEAT SOURCES. STOW ABOVE DECK FOR TEMPERATURE MONITORING.” (ECF No. 1493-15, DXs 469-471.)

²⁶ The Draft MSC Sea Waybill did not contain the heat warning that was listed on the Master Bill of Lading Instructions. (See ECF No. 976-66, DX 475.)

²⁷ The Final DGDs did not contain any heat warnings. (ECF No. 1479-3, PXs 265, 266, 267.)

²⁸ Again, the Draft MSC Sea Waybills did not contain the heat warning that was listed on the Master Bill of Lading Instructions. (See ECF No. 976-66, DX 475.)

- June 27, 10:55 pm: MSC generates its Load List (the list of which containers will be transported to a particular port on a particular vessel).
- June 28: MSC develops its stowage plan for the cargo aboard the Flaminia.²⁹
- June 29: MSC's stowage plan is provided to the stevedores at NOT.
- June 30, 5:24 pm: The Flaminia arrives at NOT in New Orleans.
- July 1, 7:30 am: The loading of the Flaminia is completed and Tanks I, J, and K along with DPA cargo are stowed in Hold 4.
- July 1, 10 am: The Flaminia departs New Orleans bound for Antwerp.
- July 2: MSC sends BDP the Final MSC Sea Waybills ("Sea Waybills").³⁰ (ECF No. 1493-43, DXs 476 (Final Sea Waybill for Tank I), 477 (for Tank J), 478 (for Tank K).)
- July 14, 2012: The explosion occurs aboard the Flaminia.

D. Deltech's Relationship with Stolt

Stolt played two roles with regard to the DVB cargo at issue here. First, it acted as an NVOCC,³¹ and in that capacity was Deltech's shipping agent and

²⁹ For an excerpt of the stowage plan depicting the positions of the containers stowed under deck in Hold 4, see ECF No. 1481, Downey Trial Decl., p. 17 ¶ 73.

³⁰ The final Sea Waybills did not contain the heat warning that was listed on the Master Bill of Lading Instructions. (ECF No. 1493-43, DXs 476, 477, 478.)

³¹ NVOCCs typically assist a cargo shipper with making necessary arrangements for the booking of any pre-carriage (such as transport by truck to an ocean terminal), as well as the

arranged for transport aboard the *Flaminia*. Stolt also arranged for truck transport (via Boasso) from Deltech to NOT. Together, these roles involved several steps. As detailed below, a customer service representative at Deltech (here, Tatonya Johnson) initiated the process of filling an order by sending a booking request to Stolt; the “booker” at Stolt (here, Erin Bruening), in turn, arranged for trucks (Boasso) carrying empty ISO containers to go to Deltech’s manufacturing facility to be loaded with liquid DVB, for those filled containers to then be transported by truck overland to the port (here, NOT). Stolt also arranged for space aboard the *Flaminia* to Antwerp, Belgium.

A key issue during this trial was whether Stolt exercised appropriate care when it carried out its assigned tasks. It did not. A separate question is whether the result of its failures (the explosion) was foreseeable. It was. The beginning point for this conclusion is based on the nature and quantum of information Stolt

booking for ocean carriage. Ocean carriage is provided by a “vessel operating common carrier” who either owns a vessel outright or charters space on vessels for the transportation of cargo. NVOCCs are middlemen acting between the shipper and the ocean carrier.

An NVOCC must comply with regulations governing the offering of dangerous goods for transport (e.g., SOLAS, the IMDG, and the HMR) as well as with any contractual obligations it may have. An NVOCC has an obligation to inform the ocean carrier of the relevant hazardous cargo information and corresponding specific handling instructions provided to them by their shipper customer regarding a dangerous goods shipment. It is the NVOCC’s responsibility to bring any special requests regarding handling or stowage to the attention to the ocean carrier. But more than that, an NVOCC has an overriding obligation under SOLAS to bring to the ocean carrier’s attention “any relevant special properties, sufficiently in advance of loading to enable the carrier to take the necessary precautions for the proper stowage and safe carriage of the cargo.” SOLAS, Ch. VI, Reg. 2.1 (5th ed. 2009). The DGD is the document in which industry standard SOLAS warnings and special requests from the shipper will be included. (See ECF No. 1489, Ahlborn Trial Decl., p. 19 ¶¶ 65-66.)

had regarding Deltech's DVB product and what would be necessary for its safe transport and handling. Stolt had, in essence, all of the material information Deltech had regarding the heat sensitivities of DVB. Deltech was forthcoming with Stolt and actively sought safe transport.

Stolt had been Deltech's NVOCC for a number of years and had acquired substantial knowledge regarding DVB properties and requirements for its safe transport. In arranging shipping here, Stolt largely ignored that safety information or failed to convey it effectively. Stolt countered this with an argument that, while it may have known of DVB's properties, it was not required to take those into consideration when making transport arrangements because Deltech had not paid for special treatment for this particular shipment. This argument is unpersuasive.

As an initial matter, the fact that heat sensitivity is an essential, non-discretionary characteristic of DVB that does not change by customer or by order necessarily means that all DVB transport must take it into consideration. The most basic requirements for safe carriage do not constitute "special requests."³² DVB simply cannot be shipped safely unless heat sensitivity is considered from the moment of filling onwards. Thus, and as is evident from the very outset of the creation of the commercial relationship between Deltech and Stolt regarding DVB

³² There are degrees of this, however. Ensuring attention to heat sensitivity at every stage cannot be considered a special request. However, particular methods of carrying it out (such as periodic temperature monitoring or a specific stowage position) can be.

transport, the immutable fact of DVB's heat sensitivity was embedded in the very concept of getting the product safely from point A to point B.

In all events, the Court is ultimately persuaded that Stolt did not in fact "exclude" or carve out handling that considered DVB's heat sensitivity from its initial vetting of the product for carriage and establishing its basic pricing (referred to as its initial "rate quote"). Rather, the back and forth between Stolt and Deltech at the time they negotiated this initial pricing (as discussed further below) shows that heat sensitive transport was always embedded into the services Stolt was providing or arranging.³³ What Stolt failed to do was implement procedures to ensure that conditions for heat sensitive transport were always considered a basic floor for services provided. It is true that, fortunately and generally, the amnesia regarding basic requirements did not lead to disastrous outcomes. This is largely explainable by the lack of a similar perfect storm of events, and simple good fortune.

In February 2007, Deltech sought a request for a quote from Stolt for the shipping DVB to Europe. (ECF No. 1491-6, DX 418.) Deltech provided Stolt with a list of requirements that would need to be considered in connection with even the most basic quote and informed Stolt that any pricing needed to allow it to "safely ship and handle our DVB 63% and eventually our DVB 80% material."³⁴ (Id., DX

³³ Stolt had the ability to reference booking requests for special instructions and to adjust rate quotes for particular cargo accordingly. For example, in one instance, Stolt's specific rate quote for a shipment relating to a specific chemical cargo took into consideration information relating to its heat sensitivity—information extracted from the booking request. (ECF No. 1482-21, DX 458.)

³⁴ Prior to arranging for the shipment of any product, Stolt vets a product and, if it is accepted for carriage, establishes a "rate quote" or pricing. (ECF No. 1490, Sikma Trial

418_005.) In an email exchange that further set forth fundamental requirements of any quote, Deltech featured the basic point that DVB is heat sensitive and must not heat above 30°C (86°F). (Id., DX 418.) The list of requirements further indicated that because of heat sensitivity, wait time, weather and other heat conditions would have to be part of any transport considerations. (Id.)

An attachment to this email exchange further provided Stolt with a variety of information relating DVB80. Deltech informed Stolt that, with respect to DVB:

Stability is affected by time & temperature and TBC is added to inhibit auto-polymerization. TBC consumes free oxygen to be effective. The higher the temperature and the longer the material is held the more the TBC & free oxygen is depleted.

(Id., DX 418_006.) Additional “requirements” for DVB’s transportation were set forth as:

- Coordinate collection to minimize waiting time prior to loading
(Target <4 days);
- Container to be stowed either ‘in stack’ or below deck to avoid direct exposure to sunlight;
- Container to be stowed away from any heat source (vessel or other container);
- Request temperature to be recorded on board every 24 hours
(Appreciate this is not always available);

Decl., p. 5-6 ¶¶ 20-22.) Integral to this process is the interaction between Stolt sales representatives and the customer in which Stolt endeavors to learn about the product for which it would be arranging transport.

- Minimize exposure to average ambient temperatures above 27°C (80.6°F) by selecting vessels with routes transiting through ambient areas lower than 27°C (80.6°F) and reducing transit times . . .

(Id.)

As part of the rate quote process, Stolt obtained Deltech's Material Safety Data Sheet ("MSDS"). (ECF No. 1490, Sikma Trial Decl., p. 5-6 ¶ 22.) Deltech's MSDS was given to John Cario, Stolt's Hazardous Materials ("HazMat") Officer.³⁵

(Id.) The MSDS had significant safety information, including:

Combustible: Hot vapors are very flammable and are heavier than air. Vapors may travel considerable distances to ignitions sources and cause flash fires or explosions.

(ECF No. 1485-39, DX 46_002.)

The MSDS also states:

Unusual Hazards Associated with Fire: Closed Containers of DVB (80%) may build up explosive pressures when exposed to the heat of fires. Closed containers (80%) exposed to heat may begin to polymerize in an exothermic manner leading to auto acceleration and rapid pressure increase and explosion potential.

(Id., DX 46_003.) And with regard to "Storage":

Store in a cool area or refrigerated tank away from high temperatures, hot pipes or direct sunlight. Maintain inhibitor TBC concentration above 1000ppm and maintain oxygen levels to near saturation. Maintain bulk liquid temperature to below 80°F (27°C) . . .

³⁵ As Stolt's HazMat Officer, Cario had responsibility to oversee the safe shipment of product. As part of this he communicates with the sales people at Stolt regarding customers' products and periodically provides advice to Stolt personnel regarding safe shipment.

(Id.) Under “Chemical Stability,” it states:

Stable under recommended storage conditions. Inhibited with [TBC]. Maintain temperature below 80°F (27°C) . . .

And:

Hazardous Decomposition Products: Dependent upon temperature and the presence of other materials.

(Id., DX 46_004.) Finally, the MSDS warns about “Hazardous Polymerization,” stating:

Polymerization may occur if material is exposed to excessive heat or catalyzed by mixture with incompatible materials. Hazardous polymerization may occur in the absence of air or if inhibitor levels are not maintained. Polymerization is exothermic and may result in auto acceleration, rapid temperature rise, increased pressure, vigorous venting of container, and fire or explosion if not arrested.

(Id.)

After vetting a product for carriage and agreeing to book it, as Stolt did here, Stolt created an entry for its “rate quote” in its internal AS/400 database. Once a rate quote/basic pricing entry is made in the system, Stolt’s operations personnel query that system for pricing information each time a new request to book arrives.³⁶

A significant gap in Stolt’s internal procedures, and causally linked to the incident here, was its failure to populate the AS/400 database with sufficient

³⁶ Stolt cannot locate the particular rate quote that relates to the Flaminia DVB shipment. (ECF No. 1607, Sikma Trial Test., p. 936-37.) Whatever that Flaminia quote may have said, the trial testimony was consistent that Stolt did not charge Deltech extra for special temperature monitoring or stowage services. (Id.)

information regarding handling DVB80 during transport as to product characteristics. Despite a variety of information Cario had available—and had reviewed as part of Stolt’s product vetting—for reasons never entirely clear, Cario limited the information he included in the AS/400 database to DVB’s UN number, proper shipping name, class, and packing group.³⁷ (ECF No. 1605, Cario Trial Test., p. 738-40, 743-51.) Thus, while Cario testified that he had received and read through Deltech’s MSDS for DVB, he did not include it. (Id.) To an outsider, Cario’s process was not only odd but downright dangerous. Information from the MSDS was thus rendered irrelevant, and that irrelevancy was carried forward into future cargo shipments. (Id. at p. 737-38, 757.)

In short, Deltech’s initial pricing request sought safe transport based on DVB’s heat sensitive nature; Stolt knew this, yet failed to include relevant and clear instructions for the database that those in operations handling relied on.³⁸

Other Stolt employees responsible for booking the Flaminia DVB80 cargo (apart from Smith) also understood its particular characteristics. Aimee Morton was in Stolt’s operations department and was responsible for booking Deltech shipments. (ECF No. 1482, Morton Trial Decl., p. 1 ¶ 4.) In that capacity, Morton regularly interfaced with Smith. (ECF No. 1605, Morton Trial Test., p. 565-66.)

³⁷ He also pulled out information regarding physical properties of the product such as color, odor, specific gravity, vapor pressure if relevant, viscosity, boiling point, melting point and flash point. (ECF No. 1488, Cario Trial Decl., p. 6-7 ¶ 21.)

³⁸ Skip Smith, the Stolt sales representative and primary contact person with Deltech through 2012, stated that in early 2007, he understood that DVB was heat sensitive. (ECF No. 1605, Smith Trial Test., p. 651-52, 676.)

She had spoken with Smith about DVB and understood that it was dangerous, heat sensitive cargo. (Id. at p. 566; see also ECF No. 1605, Smith Trial Test., p. 654.)

Smith also passed along information he received regarding DVB to others within Stolt. For instance, in September 2007, Smith wrote an email to a number of individuals at Stolt that Deltech wanted to ship DVB from Newark during the summer months in order to keep the product cool “to avoid polymerization.” (ECF No. 976-27, PX 313 (Smith Email); see also ECF No. 1605, Smith Trial Test., p. 651-52.) In a 2008 report of a meeting between Smith for Stolt and Deltech, Smith reported on certain information he had learned, including that:

This product can polymerize if exposed to lengthy periods of high temperature (say 25°C plus over 30 days). While there is an inhibitor in this product, without chilling and circulation there is a potential for incidents. Newport [another Carrier] had a major problem on a load destined to R & H in Chauny [France] that began polymerization on a French highway and hazmat teams were called out. Net result is Newport will not load this product any longer. Likewise United / Interbulk had a load polymerization between Antwerp and Grangemouth, same result [T]hey refuse to accept further bookings

(ECF No. 1486-35, DX 511_002.) The document continues:

Because of the sensitive nature of this product, during the warmer months Deltech moves DVB from Baton Rouge by tank truck to their Newark, NJ storage terminal where they can monitor it During the cooler periods, they load iso’s directly from Baton Rouge via New Orleans to North Europe.

(Id.) In March 2009, Smith again wrote to others at Stolt. He stated:

DVB is a very sensitive product and will polymerize if it’s subject to prolonged ambient heat causing lack of oxygen in the tank. For this reason, during the winter months (say through early April) it’s ok for the product to ex Baton Rouge For the warmer months, Deltech keeps a rail car in Newark I

will update our quotes to Deltech and Antwerp port and make them very competitive.

(ECF No. 976-29, PX 314.)

Despite this extensive body of information, as discussed below, when Stolt received the Booking Request from Deltech regarding the DVB80 cargo destined for the Flaminia and that referenced the very characteristics, Stolt ignored the information. Disaster was a foreseeable result.

E. Stolt's Relationship with MSC

A core issue in this matter concerns what disclosures Stolt did and did not make to MSC regarding the DVB cargo. The Stolt/MSC commercial relationship also plays a key role in establishing a mode of interaction and agreements regarding division of responsibility.

There are two documents that together establish the relevant terms of the Stolt/MSC relationship here: a Service Contract (ECF No. 1475-1, DX 468), and MSC's Sea Waybills for the specific DVB cargo (ECF No. 1493-43, DXs 476 (Final Sea Waybill for Tank I), 477 (for Tank J), 478 (for Tank K)). The Service Contract between Stolt and MSC was effective as of December 2, 2011. (ECF No. 1475-1, DX 468.) It committed the parties (Stolt/MSC) to carriage of a minimum number of freight units. (ECF No. 1475, J. Johnson Trial Decl., p. 4 ¶ 22.) The Service Contract governed Stolt's shipment of hazardous and non-hazardous bulk materials through MSC. (*Id.* at p. 4 ¶¶ 24-25.)

F. Shipping the DVB out of New Orleans

A critical event that led directly to the explosion aboard the *Flaminia* was shipping the DVB80 out of New Orleans in late June. This resulted in Tanks I, J, and K being exposed to unsafe levels of heat. First, shipment out of NOT meant that the product would be deposited into its shipping yard and sit stagnant for at least several days. In addition, NOT was—by definition—in New Orleans, and average temperatures for New Orleans in June could reasonably be anticipated to be higher than those in Newark, New Jersey. Additionally, it was known that the voyage between NOT and Antwerp would take materially longer than from Newark to Antwerp. As it turned out, all of these factors, and others, contributed to the loss.

It is therefore important that Deltech's shipment of DVB out of New Orleans violated Deltech's own carefully developed safety protocols regarding shipping and handling. These protocols, developed after the 2006 polymerization incidents, stated that NOT should be avoided at precisely this time of year. Deltech's shipping instructions in place as of June of 2012, entitled "DVB63/DVB80 Shipping & Logistics," provided that shipments of DVB80 should only be shipped to Europe through the Port of New Orleans before April 16 and after November 14. (ECF No. 1485, T. Johnson Trial Decl. p. 3-4 ¶¶ 14-15; ECF No. 1485-1, DX 344.)

Deltech's shipment out of NOT traces back to a March/April 2012 considered decision by a combination of its President, Elefante, its Vice President of Commercial Operations, Zachary Levine, and the Customer Service Representative,

Tatonya Johnson.³⁹ Because of certain customer requests, Johnson and Levine sought and received authorization from Elefante to ship DVB80 out of New Orleans after what would previously have been a safe handling cutoff date for shipments of April 16. (ECF No. 1603, Levine Trial Test., p. 469; ECF No. 1491, Levine Trial Decl., p. 31 ¶ 104.) Due to what Levine and Johnson testified was a “miscommunication” between them, Johnson believed that this authorization allowed her to book DVB shipments out of NOT into June. (ECF No. 1485, T. Johnson Trial Decl., p. 4 ¶¶ 16, 30; ECF No. 1491, Levine Trial Decl., p. 31 ¶ 105.) Levine testified that he had not intended the authorization to extend so long, but it is unclear that this view was ever expressed to anyone, including Johnson. (ECF No. 1603, Levine Trial Test., p. 471.) Elefante testified that, had he been specifically asked about whether Deltech could ship DVB80 out of NOT in June, he said “no.” (ECF No. 1583, Elefante Trial Test., p. 154.)

What is clear, however, is that in 2012, post-April shipments from NOT had been authorized. Moreover, the fact that shipments were ongoing out of NOT was no secret: information available within Deltech showed the port of embarkation;

³⁹ Tatonya Johnson was in the Customer Service Department of Deltech. (ECF No. 1485, T. Johnson Trial Decl., p. 1 ¶ 2.) Her responsibilities included booking Deltech’s export shipments. This included arranging the carriage of export shipments with NVOCC and determining when to ship product. (*Id.* at p. 2 ¶ 11.) While employed at Deltech, she received on-site training with regard to handling hazardous materials and attended a training session run by the United States Department of Transportation regarding the safe shipment of dangerous goods and hazardous products. (*Id.* at p. 3 ¶ 13.) She regularly dealt with Stolt as an NVOCC.

Johnson was an extremely impressive witness. She was highly intelligent, careful, and forthcoming. She appeared entirely comfortable and the Court felt confident that she was testifying truthfully.

nevertheless, neither Elefante nor Levine took any particular steps to ensure that NOT would cease to be used. (See, e.g., *id.* at p. 153-54.) Despite the allowance of DVB shipments out of NOT in violation of safety protocols, Deltech did not require temperature measurement of the product during even initial transit, did not provide for shipment in refrigerated containers, and did not seek to determine stowage conditions at NOT. (ECF No. 1603, Levine Trial Test., p. 469-70.) Allowing June shipments out of NOT without additional safety measures was a clear mistake—as events came to show, the product that was shipped aboard the *Flaminia* ended up being loaded early, and then sat stagnant in the open New Orleans sun before being loaded aboard a vessel. Deltech bears responsibility for this decision and its foreseeable results.

G. Booking the Shipment

The shipment of DVB80 in Tanks I, J, and K were booked by Deltech's customer service representative, Tatonya Johnson. Consistent with prior practice, Johnson's communications were solely with the NVOCC, Stolt, and not with MSC, the carrier (nor with the vessel owner, Conti, or its operator, NSB). The first step in Johnson's booking process was to email a written booking request ("Booking Request") for the cargo to Stolt. This Booking Request stated that the ocean bill of lading needed to state "Temperature Control Instructions: 'Container to be stowed

in stack' or below deck to avoid exposure to direct sunlight.”⁴⁰ (ECF No. 1485, T. Johnson Trial Decl., p. 12 ¶ 42; ECF No. 1485-19, DX 360 (Booking Requests).)

Johnson testified that she expected that Stolt would convey the handling instructions set forth in the Booking Request to the carrier. (ECF No. 1485, T. Johnson Trial Decl., p. 13 ¶ 47.) That is, she expected that Stolt would include the information to the carrier that the container should be stowed on deck and kept away from heat sources. (ECF No. 1603, T. Johnson Trial Test., p. 269-70.) Her expectation was that this instruction would result in the DVB cargo being kept out of the sunlight. (*Id.* at p. 270-71.) Stolt did not, in fact, convey these instructions effectively to MSC.

Events following Deltech's issuance of its Booking Request sealed the fate of the DVB aboard the Flaminia. Stolt's process and procedures, along with employee mistakes, resulted in (1) early filling of the DVB into ISO containers (Tanks I, J, and K) and early transport to NOT, and (2) a failure to effectively convey to MSC adequate handling instructions. Two Stolt employees played roles in connection with its side of the booking process: Erin Bruening, the “booker” at Stolt assigned to Deltech; and Aimee Morton, the “operator” at Stolt assigned to Deltech. (ECF No. 1477, Bruening Trial Decl., p. 2 ¶¶ 6-9; ECF No. 1482, Morton Trial Decl., p. 2-3, 10 ¶¶ 9, 11, 33, 34.)

⁴⁰ Deltech's President, Elefante, testified that whether the product was stored above or below deck ultimately did not matter so long as the ISO containers were kept away from a heat source. (ECF No. 1583, Elefante Trial Test., p. 170, 206-207.) Thus, above deck stowage was not a Deltech requirement.

Morton received the Booking Request from Johnson of Deltech. She did not note or pass to MSC Deltech's instructions on the Booking Request (referred to above) indicating that the product was heat sensitive and should be kept out of direct sunlight. Morton recognized that Stolt's booking department had a responsibility to pass along any special instructions to MSC.⁴¹

Next, Bruening handled the creation of MSC's Booking Confirmations (one for each tank). (ECF No. 1477, Bruening Trial Decl., p. 6 ¶¶ 20-21.) Bruening then emailed the initial Booking Confirmations to Johnson. (ECF No. 1485, T. Johnson Trial Decl., p. 13 ¶ 48.) In general, a booking confirmation sets forth what is referred to as a "document cutoff date," that is, the date upon which paperwork for cargo shipped aboard an ocean going vessel must be received by the NVOCC. (See, e.g., ECF No. 1477-12, DX 362.) However, to finalize such documentation, the cargo must be weighed (and therefore, with respect to DVB, filled into ISO containers). The first Booking Confirmations that Deltech received from Stolt set June 18 as the document cutoff date. (ECF No. 1485, T. Johnson Trial Decl., p. 13-14 ¶¶ 49-50; ECF No. 1485-32, DX 362 (initial incorrect Stolt/Deltech Booking Confirmation).) Johnson specifically noted this date and testified that because of DVB's heat sensitivity, she viewed such a date as too early; the vessel was not scheduled to

⁴¹ Morton had not been trained in what procedure to use to convey any instructions from the shipper to the carrier. (ECF No. 1605, Morton Trial Test., p. 756; see also ECF No. 1605, Bruening Trial Test., p. 634-35.) However, based upon Stolt documents relating to other shipments predating the Flaminia, Morton had, in fact, previously conveyed special instructions to the carrier, and therefore must have known how to perform this task. (ECF No. 1605, Morton Trial Test., p. 580-81; ECF No. 1482-19, DX 456.)

depart until June 30. (Id.) Johnson understood that filling ISO containers too early would lead to unnecessarily prolonged heat exposure. As a result, she immediately took the appropriate set of requesting that Stolt change the document cutoff date. (Id.)

Stolt's Bruening responded by creating a second set of Booking Confirmations with later document cutoff dates—this time of June 25 and 26. (Id. at p. 14 ¶¶ 51, 53; ECF No. 1485-33, DX 363 (Stolt/Deltech Booking Confirmation); ECF No. 1485-34, DX 364 (same); ECF No. 1485-35, DX 365 (same).) Each of the Confirmations needed for Tanks I, J, and K then issued. Subsequent events suggest to the Court that Bruening nevertheless scheduled loading the trucks bound for NOT based on the earlier cutoff date.

Stolt's next steps in the booking process were also plainly deficient. Most importantly, as discussed above, Stolt knew a significant amount about the heat sensitive nature of DVB, but now had also received a Booking Request explicitly referencing this sensitivity. Yet none of this was effectively conveyed to MSC. In addition, Deltech was not informed that its instructions were ignored. Stolt's deficiencies in this regard trace back to (1) poor training, and (2) a misguided reliance on the rate quote base in its AS/400 system to determine its handling instructions.

When Morton received the Booking Request from Deltech, her steps were essentially automated: Irrespective of what was written on this particular or any Booking Request, she made a routine query of Stolt's AS/400 system. This is the

system that Stolt's HazMat specialist, Cario, testified he had populated with limited information about the DVB80 product. Morton's query would not only elicit pricing for shipment, but form the basis of its handling instructions to MSC. She did not examine the DVB80 Booking Request for anything that might not be reflected in the AS/400 system and appears not to have considered the handling instructions plainly noted on its face. According to Stolt's North American operations manager William Sikma,⁴² this failure was an error: Stolt personnel (including Morton) should have reviewed the Deltech Booking Request for any "special requests," and if special requests were made (and not contained in the quote), then the Stolt bookers were expected to contact the customer (Deltech) and alert it to the discrepancy. (ECF No. 1607, Sikma Trial Test., p. 918-919.) This was not done with respect to the Flaminia shipment. (Id. at p. 919, 920-23.)

Sikma further testified that Stolt's ordinary procedures should have led Stolt to note the request for particular stowage (out of direct sunlight and therefore in stack or below deck) as well as a request for temperature monitoring, and to reach out to MSC to determine whether it could or would comply.⁴³ (Id. at p. 929-31.) This never occurred. (Id. at p. 931.) Stolt's unthinking reliance on the information in the AS/400 system was consistent with how it had previously dealt with all of

⁴² Sikma had oversight responsibility for the operations group within Stolt that handled booking requests. (ECF No. 1607, Cario Trial Test., p. 790.)

⁴³ The Court does not accept that basic awareness of and conveyance to MSC of DVB80's heat sensitivity constituted a "special request." Such handling instructions should have automatically been conveyed to MSC.

Deltech's booking requests: numerous requests had contained the same statements regarding stowage and temperature monitoring, but Stolt had routinely ignored them.

On June 11, 2012, Michael Herrera, MSC's VIP booker for Stolt, received a call from Bruening to book space aboard the MSC. (ECF No. 1479, Herrera Trial Decl., p. 6 ¶ 30; ECF No. 1609, Herrera Trial Test., p. 1209.) During that call, Bruening identified the DVB cargo by its UN number (3082) and told Herrera the cutoff dates. (ECF No. 1479, Herrera Trial Decl., p. 6 ¶ 31.) She did not inform Herrera that the cargo consisted of DVB80 nor that it was heat sensitive. Herrera then created a booking in MSC's computer carriage booking system, Link. (Id. at p. 7 ¶ 32.) He also created MSC's own booking confirmations to be sent to Stolt. These confirmations noted that the cargo's document cutoff date from MSC's perspective was June 26, at 2 pm, and the vessel cutoff date was June 26, at 4 pm; the cargo was estimated to leave on a vessel on approximately June 30, 2012, with an estimated date of arrival as July 17, 2012. (Id. at p. 7 ¶ 34; ECF No. 1479-1, PXs 259, 260, 261 (MSC Booking Confirmations).) These departure and arrival dates were not guaranteed.⁴⁴

One of the documents Stolt created was instructions for the Master Bill of Lading.⁴⁵ MSC uses a master bill of lading for a specific purpose: to track cargo. It

⁴⁴ These cutoff dates plainly allowed for later filling and loading of the ISO containers; June 21 filling and loading was unnecessarily early.

⁴⁵ There are several documents referred to as "bills of lading" that are associated with the shipment of cargo. They include: (1) the "Straight Bills of Lading" (one per Tank of DVB),

informs MSC that cargo has arrived at a departure terminal, and is destined for shipment aboard a particular vessel, for a particular destination. Thus, although the Master Bill of Lading contained heat warnings—“DO NOT STOW NEAR HEAT SOURCES” and “STOW ABOVE DECK FOR TEMPERATURE MONITORING”—a master bill of lading is neither designed nor used in the industry to provide a vessel with special handling instructions for dangerous goods.⁴⁶ (See ECF No. 1493-15, DXs 469-471 (Master Bill of Lading Instructions).) Such information—which must be factored into stowage planning—needs to be received further in advance of the cargo so that proper arrangements can be made.

Neither Herrera nor anyone else at MSC ever informed Stolt that information in the Master Bill of Lading Instructions would not be followed by MSC. (See ECF No. 1609, Herrera Trial Test., p. 1225-28.) Herrera testified that neither Bruening nor anyone else at Stolt ever requested special stowage, segregation or handling with regard to the DVB Containers. (ECF No. 1479, Herrera Trial Decl., p. 9 ¶ 43.)

created by Deltech and provided to Boasso (see ECF Nos. 1485-28, 1485-29, 1485-30, DXs 48, 49, 50 (Straight Bill of Lading for Tanks I, J, K)); (2) an “Express Bill of Lading,” for which Deltech sent instructions to Panalpina (ECF No. 1485-42, DX 367_002, _006, _010 (Deltech Express Bill of Lading Instructions)); (3) a “Master Ocean Bill of Lading,” for which Panalpina sent instructions to BDP, Stolt, and Deltech (ECF Nos. 1485-43, 1485-44, 1485-45, DX 368, 369, 370 (Freight Prepaid Express Bills of Lading)); and (4) the “Master Bill of Lading,” which BDP (on behalf of Stolt) created and provided to MSC (ECF No. 1493-15, DXs 469-471 (Master Bill of Lading Instructions)).

⁴⁶ Likewise, a bill of lading, which accompanies cargo, does not functionally provide notice for stowage and handling issues.

H. The Dangerous Goods Declarations (DGDs)⁴⁷

A significant issue at trial concerned whether the DGDs prepared by Stolt contained the appropriate information for the carrier to enable safe handling.⁴⁸ In addition, the parties spent significant time arguing whether DGDs are, can, or should be the sole piece of paper a carrier may consult to determine safe shipping and handling. The evidence at trial supports this Court's determination that in 2012, the cargo shipping industry used DGDs as the central repository of information relating to safe handling and transport of dangerous cargo. This was widely known through the cargo shipping industry. It would have been impractical for carriers to have had multiple pieces of paper relating to handling dangerous goods, the primary use of which was different (e.g., the Booking Confirmation, Master Bill of Lading Instructions, and Sea Waybills) and then to have had to compare them to each other and/or to a DGD.

The Hazardous Materials Regulations ("HMR") prohibits ocean carriers from carrying dangerous goods without having received a DGD for such goods. (ECF No. 1480, Kutz Trial Decl., p. 5 ¶ 17.) MSC USA, which serves as MSC SA's agent in

⁴⁷ Following the Flaminia incident, Dean Kutz, the Director of Safety, Security & Compliance at MSC, requested a review of DGDs associated with the DVB Containers and found no errors vis-à-vis basic required information. (ECF No. 1611, Kutz Trial Test., p. 1263.) In addition, he requested a review of MSC's stowage plan and found no errors in terms of its conformance with MSC's normal procedures. (ECF No. 1480, Kutz Trial Decl., p. 7-8 ¶¶ 26, 27.)

⁴⁸ The law requires that a DGD accompany any cargo that falls into an enumerated category of dangerous items. With regard to DVB shipped in ISO containers, such as those here, DGDs can only be created once the NVOCC has received an identification number associated with an ISO container. The NVOCC typically receives this number the day prior to loading. (ECF No. 1605, Morton Trial Test., p. 616.)

the United States, will not accept custody of a customer's dangerous goods prior to receipt of a valid DGD. (Id.) MSC's practice, and industry practice, was to use DGDs as the primary source of safe handling information for dangerous goods. At a minimum, a DGD must contain a proper shipping name for a particular good,⁴⁹ UN number, and Class. (Id. at p. 5 ¶ 15.)

The DGDs associated with Tanks I, J, and K identified the cargo as Environmentally Hazardous Substances, Liquid, NOS UN 3082, Class 9. Nothing in the DGDs called them out as heat sensitive. This was not a violation of IMDG requirements, but did deprive MSC of key information. Deltech asserts that Stolt should have ensured that DGDs contained additional information regarding heat sensitivity—beyond that required by the IMDG—and this is plainly correct. Stolt's position to the contrary is based on a view of the IMDG Code as setting both a ceiling and a floor, and how its "rate quote" system worked (which was imperfect). For instance, if cargo is being shipped in a refrigerated container, there might be a special instruction in that regard. Here, however, according to Stolt, Deltech did not pay for any special handling of its DVB, so DGDs that did not reference heat sensitivity were proper. This position ignores that DGDs are concerned with safety, not pricing. While DGDs fill one important purpose of disclosing to the carrier and vessel operator certain information regarding the dangerous cargo, no rule or regulation prohibits an NVOCC from conveying more than is required. Industry

⁴⁹ Section 3.1.2 of the IMDG Code defines "Proper Shipping Name" as "that portion of the entry most accurately describing the goods in the Dangerous Goods List."

and MSC's practice was to use DGDs as the primary source of safe handling information for dangerous goods. Disclosure of heat sensitivity via the DGD would have been effective disclosure.

Stolt, as Deltech's NVOCC, created the DGDs. On June 20, Stolt's Morton prepared preliminary drafts. (See ECF No. 1479-2, PXs 262, 263, 264 (Initial DGDs).) However, here again Stolt's process broke down: the Booking Request received from Deltech played no role in her creation of the document. (ECF No. 1605, Morton Trial Test., p. 592; see also ECF No. 1605, Bruening Trial Test., p. 644-45.) Thus, the safe handling information on Deltech's Booking Request was ignored. Instead, Morton followed her routine practice of simply examining the cargo's "UN number," the "proper shipping name," the "Class," and "group."⁵⁰ (ECF No. 1605, Morton Trial Test., p. 592.)

I. Filling and Transporting the ISO Containers to NOT

This Court previously found that Deltech manufactured the DVB adequately oxygenated and chilled. See Flaminia Phase I Opinion, 2018 WL 526549, at * 31. Had the events specific to this incident not occurred, there is no reason to believe the DVB would have auto-polymerized. Once manufactured, however, ISO

⁵⁰ Stolt's process and training with regard to dangerous goods were plainly deficient. Michael Daum, an expert in regulatory compliance with regard to the shipment of hazardous materials and dangerous goods, testified for MSC. (ECF No. 1484, Daum Trial Decl., p. 3 ¶ 13; see ECF No. 1615, Daum Trial Test., p. 1830.) He has significant knowledge regarding industry standards and regulatory requirements for NVOCC. He testified credibly that NVOCCs typically pass along to the carrier all relevant information it receives from a customer regarding a cargo.

containers had to be filled with the DVB, transported to NOT by truck and then loaded aboard the ocean going vessel. A fateful event occurred at the time of filling.

The evidence at trial supports that both Deltech and Stolt personnel routinely involved in ocean carriage of DVB knew that safe transport required avoiding conditions that could result in DVB sitting stagnant in a non-temperature controlled setting. Nevertheless, a series of errors described above meant that the DVB was filled into ISO containers days earlier than it should have been, and was then trucked to NOT where it sat in the New Orleans sun.

As described above, Deltech's Johnson undertook to ensure that ISO containers that would begin the first transport leg of the journey would not be filled "early." As described above, consistent with this, she specifically noted and changed the document cutoff date. But then events took a wrong turn: Johnson had the authority to allow filling of ISO containers with DVB.⁵¹ Given the document cutoff date of June 25, Johnson expected that the ISO containers destined for the Flaminia would be loaded that day (in the morning), and not earlier. (ECF No. 1603, T. Johnson Trial Test., p. 272.) This was important because June 25 was a Monday, so earlier loading would have resulted in the DVB sitting stagnant over a weekend.

⁵¹ Despite scheduling container fills to accomplish this, there had been other instances when Stolt had disregarded scheduled loading dates and sent ISO tanks to be filled with product sooner. On at least one occasion, Johnson had required one or more trucks to turn around empty rather than allow early loading. (ECF No. 1603, T. Johnson Trial Test., p. 279-80.)

The week of June 21, 2012, was, however, a personally difficult week for Johnson. She had an unexpected serious medical issue that took her out of the office on June 20 and 21 (and for two weeks after that). On the morning of June 21, several things occurred: (1) Stolt had sent Boasso trucks with ISO containers (Tanks I, J, and K) to Deltech to be filled with DVB; (2) Johnson had just that morning been released from the hospital where she had had an emergency procedure and was on prescribed painkillers; she had told someone in the finance group why she was out of the office, but had not authorized or expected that that individual would have shared this information with others; (3) when the trucks arrived at Deltech to be filled, an employee covering for Johnson, Robert Ortiz, was asked to authorize the filling. Apparently not knowing that Johnson was unlikely to be able to focus effectively, Ortiz called Johnson at home for authorization; Johnson gave him such authorization.⁵² The ISO Containers were then filled with DVB.⁵³

⁵² When she received the call from Ortiz, Johnson testified that she was not focused on whether Ortiz was seeking permission to fill DVB or another product into tanks. (Deltech also manufactures products that did not have the same heat sensitivity.) To the extent she considered it at all, she did not expect it was the DVB because she had scheduled those for loading on June 25, 2012.

⁵³ Tommy Sciortino was Deltech's loader responsible for filling the DVB80 ISO containers here at issue. (ECF No. 1487, Sciortino Trial Decl., p. 1 ¶ 3.) Prior to filling an ISO container, Deltech's loaders perform tank inspection of the truck, truck chassis, and the containers themselves. (*Id.* at p. 1 ¶ 5.) This routine inspection was performed. As part of the general loading process, Sciortino also oversaw the placement of placards and marks to the exterior of the ISO containers filled with DVB. (*Id.* at p. 2 ¶ 7.) The placarding of the DVB was appropriate: a placard was placed on the exterior of the ISO containers to indicate that the cargo constituted a Marine Pollutant. (*Id.* at p. 2-5 ¶¶ 8, 10, 19, 20.) Also at the time of loading, the DVB is tested to ensure that it is the correct temperature and has the requisite amount of inhibitor (TBC). That testing was done.

While the circumstances of Johnson's absence were not foreseeable, employee absence certainly is. When employers are dealing with dangerous cargo it is reasonable to assume that they will have procedures in place to ensure appropriate decision making by replacement employees or those who may be out of the office for personal reasons and may be distracted.

Following the filling of Tanks I, J, and K with DVB, Deltech created a Straight Bill of Lading (the "Straight Bill of Lading"). (ECF No. 1485-28, DX 48 (for Tank I); ECF No. 1485-29, DX 49 (for Tank J); ECF No. 1485-30, DX 50 (for Tank K).) This document was given by the Deltech loader to the Boasso trucker. Deltech's DVB80 MSDS was attached to the Bill of Lading.⁵⁴ (ECF No. 1485-39, DX 46 (MSDS).) The Straight Bills of Lading contains a section entitled "Special Instructions"; this section stated, "See Attached safety data sheet for emergency response information. Product is heat sensitive! . . ." (ECF No. 1485-28, DX 48; ECF No. 1485-29, DX 49; ECF No. 1485-30, DX 50.)

⁵⁴ Stolt failed to ensure that the Bill of Lading or the MSDS was passed along to the carrier or crew of the vessel. (ECF No. 1491, Levine Trial Decl., p. 39-41 ¶ 131; ECF No. 1607, Sikma Trial Test., p. 965-66.) Indeed, the only trial witness who was knowledgeable about the trucking of the DVB from the point of loading to the terminal, testified that the trucker would receive the bill of lading and the MSDS from Deltech, but he did not know if the terminal yard made a copy of that paperwork, or even if the trucker surrendered the paperwork. Stolt did not instruct the trucker to provide the MSDS to the terminal, nor did it confirm that the trucker provided the MSDS to the terminal. (ECF No. 1609, Sikma Trial Test., p. 1019-21.) Stolt was not relying on the trucker to provide the MSDS to the terminal. (ECF No. 1490, Sikma Trial Decl., p. 14-16 ¶ 57-64.) Stolt only provided MSC with DGDs and the Master Bill of Lading Instructions. (ECF No. 1609, Sikma Trial Test., p. 1019-21.)

Deltech gave inconsistent testimony as to whether it expected its Straight Bill of Lading and MSDS paperwork to accompany the shipment to Antwerp.⁵⁵ Johnson, the customer service representative responsible for booking logistics, asserted that Deltech had such an expectation (ECF No. 1603, T. Johnson Trial Test., p. 350), but Levine, her supervisor, said he had no expectation one way or the other. In all events, neither had any understanding as to how information given to a trucker would or could be conveyed to the crew of the ocean-going vessel.

Part of the loading process involves Deltech's creation of "instructions" for an "Express Bill of Lading" ("Deltech Express Bill of Lading Instructions"). Typically, and here, these instructions are then provided to the freight forwarder (here, Panalpina), which uses them to complete a "Master Ocean Bill of Lading." (See ECF Nos. 1485-43, 1485-44, 1485-45, DXs 368, 369, 370 (Freight Prepaid Express Bills of Lading).) This document cannot be created until the tanks are filled and can be weighed. On June 21, 2012, Deltech's Ortiz (again, covering for Johnson) provided the freight forwarder, Panalpina, with the Express Bill of Lading Instructions.⁵⁶ Stolt received a copy of the Express Bill of Lading Instructions at the time of its creation. (ECF No. 1485-42, DX 367_002, _006, _010 (Deltech Express Bill of Lading Instructions).) Both the Booking Request that provided

⁵⁵ In any event, there was insufficient factual basis for anyone at Deltech to believe that these documents would in fact be used to inform handling decisions.

⁵⁶ There are no pending claims against Panalpina.

instructions for the Master Ocean Bill of Lading and the Express Bill of Lading Instructions sought controlled temperature conditions.⁵⁷

J. BDP

In 2012, Stolt used another company, BDP, to assist in the preparation of its export documentation. (ECF No. 1490, Sikma Trial Decl., p. 12 ¶ 45.) BDP received Instructions for an Express Bill of Lading from Deltech on June 21. (Id. at p. 12 ¶ 46.) BDP also prepared instructions to be provided to MSC for its own Master Bill of Lading. These instructions should be consistent with Deltech’s bill of lading instructions, inclusive of any stowage or handling instructions therein. (Id. at p. 12 ¶ 47.) BDP’s instructions included the statement: “DO NOT STOW NEAR HEAT SOURCES. STOW ABOVE DECK FOR TEMPERATURE MONITORING.” See In re M/V MSC FLAMINIA, No. 12-cv-8892 (KBF), 2017 WL 3738726, at *3 (S.D.N.Y. Aug. 30, 2017) (ECF No. 1331, Corrected Opinion & Order dated August 30, 2017) (hereinafter, “Flaminia BDP/Stolt Opinion”).

Based on these instructions, MSC then prepared a draft or proof copy of the Master Bill of Lading, inclusive of any stowage or handling instructions from the

⁵⁷ Both documents included heat warnings. (See ECF No. 1485-19, DX 360 (Booking Requests) (providing specific “Temperature Control instructions” and listing various “Temperature Monitoring” instructions); ECF No. 1485-42, DX 367_002, _006, _010 (Deltech Express Bill of Lading Instructions) (“DO NOT STOW NEAR HEAT SOURCES. STOW ABOVE DECK FOR TEMPERATURE MONITORING.”).

The Court is not concerned that as between those two documents there were differences in whether the instructions requested stowage above deck versus below deck. The point is that temperature control was expected and instructions to that effect were given.

customer. Id. (See also ECF No. 976-66, DX 475 (Draft MSC Sea Waybills and Freight Invoices).) But the draft that MSC prepared and sent back to BDP omitted the instruction about heat sources. Flaminia BDP/Stolt Opinion, 2017 WL 3738726, at *3. (See also ECF No. 1488-18, DX 472 (Instructions for Master Bill of Lading); ECF No. 1490, Sikma Trial Decl., p. 14 ¶ 54). BDP failed to notice that this instruction was missing. Flaminia BDP/Stolt Opinion, 2017 WL 3738726, at *3. BDP was expected to fulfill its documentation functions without direct oversight from Stolt.⁵⁸ (ECF No. 1490, Sikma Trial Decl., p. 13 ¶ 52.)

Stolt's Sikma testified that he would have expected Deltech's instructions for the Master Bill of Lading (such as the instruction not to stow near heat sources) would have been conveyed to MSC by BDP. Ultimately, however, MSC's bills of lading for the three shipments at issue did not include these instructions. In all events, there was insufficient evidence to support the view that inclusion of this instruction could reasonably have been expected to alter MSC's handling of the particular dangerous cargo here. It was also not foreseeable that a failure to include it could have led to the explosion.

⁵⁸ Stolt introduced a large number of documents that served to demonstrate that a nonparty to this litigation, Suttons, Leschaco, Bulkhaul, and Newport, which also shipped DVB from time to time, did so with documentation similar to that of Stolt. The Court is not persuaded that this makes Stolt's documentation sufficient. Instead, the Court is persuaded (1) that luck has played a role in the absence of DVB polymerization incidents, and (2) that documentation was also simply inadequate to have warned of the dangers inherent in exposure to heat sources. Notably, this documentary evidence was accompanied with evidence that the conditions of transport and heat exposure for any of those DVB shipments mirrored those aboard the *Flaminia*—this is where the luck comes in. Moreover, this evidence was also not accompanied by proof that the information disclosed on this documentation led to any different attention by MSC to the conditions of stowage.

K. MSC's Carriage

MSC's primary business is the ocean transport of containers.⁵⁹ (ECF No. 1478, Bozzo Trial Decl., p. 4 ¶ 15.) It transports many thousands of diverse cargo containers on ocean-going vessels all year long. It is not uncommon for dozens of individual parties to have a need to coordinate and share information to transport cargo from the point of origin to its final destination. Safe transport requires accurate relaying of information received from the shipper.

As an ocean carrier, MSC regularly books dangerous goods for transport. It uses accepted industry standards to do this, and used such standards here. The majority of MSC's vessels are time chartered—that is, they are hired from a vessel owner for a defined period. In MSC's time charter agreement here, the shipowner (Conti) remains responsible for the management, crewing and operation of the vessel, while MSC was responsible for selecting the ports where the ship would travel and the cargoes carried. (Id. at p. 5, 6 ¶¶ 24, 26.)

Thus, MSC was responsible for (1) obtaining the vessel, (2) booking cargo, and (3) creating a stowage plan for booked cargo based on relevant characteristics of the cargo such as the nature of the cargo, weight, and any handling requirements.

MSC does not guarantee the duration of any particular voyage.⁶⁰ (Id. at p. 6 ¶¶ 28-29.) The duration of a voyage may be impacted by issues such as weather,

⁵⁹ Shipping containers packed and sealed by the shipper ordinarily will not be opened until they reach their final destination. (ECF No. 1478, Bozzo Trial Decl., p. 5 ¶ 20.)

⁶⁰ This lack of certainty regarding duration was foreseeable and yet another reason why shipping DVB out of NOT in June was a gamble.

port congestion, mechanical breakdowns, and labor. (Id. at p. 6 ¶ 29.) Other impacts on the overall duration of the transport of a cargo include what may occur prior to loading onto a ship such as delays in loading, trucking, or on the dock. For ocean shipment, on time performance ranges between 70 and 85%. (Id. at p. 7 ¶ 30.)

MSC SA has a dangerous goods department in Antwerp, Belgium that has involvement in the shipping of dangerous goods worldwide. For cargo leaving from a U.S. port, MSC USA has initial responsibility to vet a product's characteristics for shipping. MSC USA's decisions as to whether to accept dangerous cargo is then reviewed by MSC SA in Antwerp. In order to perform this task, MSC USA's Charleston office relies on the DGDs provided by customers.⁶¹ (Id., p. 7 ¶ 32.)

A primary argument pursued by Stolt and Deltech was that MSC had significant experience with and information about DVB yet failed to call on this knowledge for the cargo aboard the *Flaminia*, causally leading to the explosion. The Court rejects this logic. It is true that MSC had carried DVB cargo on numerous occasions prior to June 2012. And, in that regard, it had received numerous transport documents, including straight bills of lading, that referenced DVB's heat sensitivity. According to Stolt, all of this constitutes a body of knowledge that MSC should have referenced to determine how to handle the DVB cargo in Tanks I, J, and K. But, first, the fact that other shippers and NVOCCs had included handling

⁶¹ As a general matter, except for refrigerated cargo carried in temperature controlled containers, only a very small fraction of the shipments booked with MSC involve requests by customers for special stowage, segregation or handling (collectively known as "special requests"). (ECF No. 1478, Bozzo Trial Decl., p. 7 ¶ 33.)

instructions on bills of lading or other non-DGD documents does not define the standard for effective communication of that information to a carrier. The question is what a carrier can reasonably be expected to review and act on. The absence of other explosions does not prove effective communication, but may suggest different overall conditions and/or good fortune.

Stolt and Deltech also point to MSC SA's head of Dangerous Good Cargo Department, Dirk Vande Velde, as a repository of information regarding DVB safe handling. Stolt repeatedly asserted that if Vande Velde told others at MSC what he knew about DVB, the explosion aboard the *Flaminia* would not have occurred. This is unfair and incorrect. One person at a large company such as MSC, shipping thousands and thousands of cargo containers, is not responsible for investigating each container or its handling prior to dropping it at the terminal. Vande Velde conceded that prior to June 1, 2012, he—and therefore MSC—had reviewed information that “DVB should not be loaded onto a vessel if the temperature was above 27°C.”⁶² However, this general information was not used—nor could it reasonably have been used—to inform specific decisions regarding specific cargo (here, three tanks out of thousands on a single vessel). Instead, given the volume of cargo carried by MSC, it is reasonable for it to rely on the DGDs to provide it with key safety information.

⁶² MSC has a list of prohibited cargo—DVB is not on that list. That list is created by MSC in Antwerp. (ECF No. 1611, Kutz Trial Test., p. 1275, 1303-04.)

L. Stowage of the DVB at NOT⁶³

After being filled into Tanks I, J, and K the DVB cargo was then transported by truck to NOT. Nothing eventful occurred on that leg of the journey. The tanks arrived later in the day of June 21. NOT followed its normal procedures for processing and stowage at the terminal.

James R. Parker, the Vice President of NOT, testified at trial.⁶⁴ Parker testified that NOT has a contract with each of the ocean carriers, including MSC, who disembark from it. (ECF No. 1476, Parker Trial Decl., p. 2 ¶ 8.) Cargo arrives at NOT in an organized manner designed to manage heavy inflow of diverse containers. The first step in bringing cargo into NOT is for a trucker (or an individual working on the trucker's behalf) to make an appointment through NOT's electronic system, typically the day before desired unloading. (*Id.* at p. 4 ¶ 17.) On a regular basis, dangerous goods constitute between 5 and 50% of the 500 containers received. Thus, NOT may receive up to 250 containers of dangerous goods on a single day. On average, about 15% of daily cargo are dangerous goods.

⁶³ MSC has an ownership interest in NOT. (ECF No. 1607, Bozzo Trial Test., p. 846-48.) Certain MSC personnel are deeply involved in its operations. (*Id.* at p. 848-50.) NOT follows the handling instructions provided to it by MSC. This is a sensible practice. If it were otherwise, a customer could bypass the MSC rate quote and seek unanticipated special handling for which a higher price would have been charged. (*Id.* at p. 858-59.) Claudio Bozzo, MSC's Chief Operating Officer, testified credibly that it was industry standard for the carrier to control the stowage and handling of dangerous goods. (*Id.* at p. 860.)

MSC does not give NOT special instructions as to how it should store cargo at its terminal. (ECF No. 1478, Bozzo Trial Decl., p. 8 ¶ 38.)

⁶⁴ Parker was knowledgeable about NOT's business and procedures, forthright, and consistent. This Court places weight on his testimony.

General practice in the industry, and at NOT, is to have the entry lanes through which trucks enter the terminal yard not differentiate between whether cargo is or is not designated as an IMDG “dangerous” good. (ECF No. 1609, Parker Trial Test., p. 1030.)

Once a truck enters NOT, it stops at an initial pedestal at which the driver does not transfer any documentation.⁶⁵ An automated process confirms an identification number on the exterior of the cargo containers and the chassis number of the truck, and matches the information with what was entered at the time the appointment was made. (ECF No. 1476, Parker Trial Decl., p. 5 ¶ 18.) The driver then receives a single ticket for non-hazardous goods, and two tickets for hazardous goods. The tickets inform the driver of the location in the yard where he will deposit the cargo.⁶⁶ The driver then proceeds to a second pedestal where, for hazardous goods, an inspector reviews one of the tickets. At this point, the driver hands the inspector the straight bill of lading. (*Id.* at p. 5 ¶¶ 20-21.) For hazardous goods, the inspector reviews the straight bill of lading for basic pedigree purposes, including a quick review of the UN number, class, identification of the container, and whether appropriate placards (associated with the UN number or class) are in place. (ECF No. 1609, Parker Trial Test., p. 1043-45.) The inspection is not intended to determine the specific nature or contents of cargo. If an MSDS was

⁶⁵ The process to get from the gate to the drop in the yard takes about 20 minutes for a single load. (ECF No. 1609, Parker Trial Test., p. 1083-84.)

⁶⁶ NOT is an open air yard.

included with a bill of lading (as it likely was when Tanks I, J, and K arrived at NOT), it would be considered extraneous and would not be reviewed. (ECF No. 1476, Parker Trial Decl., p. 6-7 ¶¶ 25-29.) In short, NOT's process is cargo receipt and storage. It does not conduct a substantive review of goods or initiating concerns about how particular types of cargo should be handled. All of the above steps for NOT's normal process occurred here with regard to Tanks I, J, and K.

At the second pedestal, if there is a notation in the booking that requires temperature monitoring, the inspector would check the temperature gauge on the exterior of the tank. The appointment booking therefore controls whether this step occurs, not information on a bill of lading or the MSDS.⁶⁷ If there is no request for a temperature check, it is not done, irrespective of the cargo's UN number or proper shipping name.

Parker testified that the bill of lading and MSDS provided to the inspector are simply filed away. They are not transmitted to the carrier.⁶⁸ (ECF No. 1609, Parker Trial Test., p. 1063-64.) NOT stores cargo according to the information associated with the UN number and class; and all "Class 9" cargo (such as the DVB

⁶⁷ On June 21, 2012, when NOT accepted the DVB Containers at issue and received the Straight Bills of Lading, each stated that the DVB was heat sensitive: "PRODUCT IS HEAT SENSITIVE! DO NOT APPLY HEAT TO CONVEYANCE DURING TRANSIT. IF PRODUCT TEMPERATURE EXCEEDS 100F, CONTACT DELTECH IMMEDIATELY." (ECF No. 1485-28, DX 48 (Straight Bill of Lading for Tank I); ECF No. 1485-29, DX 49 (for Tank J); ECF No. 1485-30, DX 50 (for Tank K).)

⁶⁸ Parker testified that he does not know whether anyone at NOT reviewed the MSDS relating to Tanks I, J, and K—and indeed did not know whether the MSDS was even presented at the time they were off-loaded at NOT. (ECF No. 1609, Parker Trial Test., p. 1063-65, 1097-99.) MSC did not instruct NOT to handle the DVB containers in any particular manner. (ECF No. 1476, Parker Trial Decl., p. 10 ¶ 46.)

and DPA here) are treated similarly and interchangeably for storage in the yard. (ECF No. 1476, Parker Trial Decl., p. 7-8 ¶¶ 32, 38; ECF No. 1609, Parker Trial Test., p. 1076-77.)

Stolt and Deltech both assert that NOT, partially owned by MSC, acted negligently when handling the DVB and DPA cargo. The Court disagrees. While Tanks I, J, and K were stowed in the open sun in New Orleans and adjacent to ISO containers of DPA, there was no indication in the booking with NOT or the DGDs that they should be handled otherwise. NOT's handling of cargo is literally out in the open—if a shipper is sending cargo out of New Orleans, he can expect that at some point it will arrive at NOT's yard; if the shipper has not made other arrangements, it is entirely foreseeable that the cargo will sit in that yard, stagnant, under the New Orleans sun. It is also reasonably foreseeable that unless specific and different instructions have been made, the cargo will be deposited next to other cargo, the characteristics of which are unknown. Certainly solar radiative heat from the exterior of other ISO containers (irrespective of cargo content) can reasonably be expected.

Placement decisions for the yard at NOT are made by an allocation clerk. The allocation clerk bases his decisions on a cargo's UN and class numbers and any specific information regarding the cargo. Class 9—the Class at issue here—does not have any separation requirements under the IMDG Code.⁶⁹

⁶⁹ The IMDG Code specifies certain cargo that should be stowed separately from one another. See IMDG Code, Ch. 7.1.

None of NOT's processes or procedures are confidential. New truckers receive a letter describing the basic steps in the process. Thus, both Deltech and Stolt could easily have learned how NOT operates.

As a foreseeable result of the above process, Tanks I, J, and K sat in the open sun at NOT, adjacent to other UN number 3082, Class 9 cargo, DPA, for 10 days. During that time, it was exposed to ambient temperatures higher than 27°C (80.6°F). This stagnant stowage should have been reasonably anticipated by Stolt. In addition, Deltech conceded that it considers its ISO containers to remain under its control and to be subject to pull back until the time of loading and stowage aboard the vessel. (ECF No. 1603, Levine Trial Test., p. 408.) However, it took no steps to ensure the external temperature gauge on each tank was checked prior to loading aboard the ocean-going vessel.

M. Stowage Aboard the Flaminia⁷⁰

As the carrier, MSC is responsible for stowage aboard the vessel. The stowage of Tanks I, J, and K was consistent with MSC's routine practices. (ECF No. 1481, Downey Trial Decl., p. 17 ¶ 74.) In addition, the fact that dangerous cargo was stored in Hold 4 was consistent with the IMDG Code's stowage and

⁷⁰ While Deltech's President, Elefante, testified that he expected that the temperature gauge on the exterior of Tanks I, J, and K would have been checked prior to loading onto the Flaminia (ECF No. 1583, Elefante Trial Test., p. 168-169), no specific provision for such checking had been requested for these tanks.

Each ISO container has an external temperature gauge. Deltech expected that if the temperature of the DVB in the tank exceeded 27°C (80.6°F), it would not be loaded onto a vessel (because the risk of polymerization would be too high). (ECF No. 1603, Johnson Trial Test., p. 265.)

segregation requirements, and could reasonably have been anticipated by all participants in the transport chain. (Id. at p. 18 ¶ 76.)

MSC USA's Planning Department plans stowage for vessels embarking from U.S. ports, and did so for the *Flaminia*.⁷¹ Organizationally, MSC USA's Planning Department is one of a number of worldwide planning centers operated by MSC SA. MSC SA's Planning Department in Geneva sets global policies for stowage aboard MSC vessels.

The process for stowage aboard the *Flaminia* followed MSC's normal procedures. It began about three days before the vessel was actually to be loaded, a day before the deadline for delivering the cargo to the marine terminal. In deciding where to place cargo, MSC's vessel planners consider factors such as weight, type of container (e.g., is it in a reefer that must be near a power outlet), the IMDG Code (which sets form segregation requirements), and a few in-house MSC rules in excess of the IMDG Code. Thus, even the information in databases elsewhere within MSC do not alter stowage plans. Given the number of cargo containers and diverse types of cargo, it was unreasonable to expect that MSC could or would undertake a research project with regard to any particular container.

MSC's own rules provided for stowage of all dangerous goods cargo as if they were heat sensitive. (ECF No. 1481, Downey Trial Decl., p. 11 ¶ 44.) For instance,

⁷¹ MSC does not consider the chemical characteristics of cargo when preparing its stowage plan. (ECF No. 1609, Downey Trial Test., p. 1170-71.)

MSC rules required keeping dangerous goods away from bunker tanks and the motors on reefers.⁷²

The cargo information used by MSC's vessel planner is contained in an electronic file known as a "Load List." The Load List is generated from MSC USA's computerized booking system called MSC Link. MSC Link contains information provided by customers during the booking process, including the type and size of the container, the container's serial number, the weight, and for dangerous goods, its Class and UN number.⁷³ (ECF No. 1481, Downey Trial Decl., p. 12 ¶ 52.) Consistent with its process overall, MSC's Link System includes only information required by the IMDG Code. (ECF No. 1611, Kutz Trial Test., p. 1280-81.) Within UN number and Class, cargo is treated as fungible.⁷⁴ That is, a "UN number 3082, Class 9" tank is treated like any other UN number 3082, Class 9 cargo, irrespective of the contents.⁷⁵

⁷² MSC's rules do not mean that such cargo might not be in the same hold as other dangerous goods.

⁷³ MSC does not use the "proper shipping name" in making stowage decisions. (ECF No. 1609, Downey Trial Test., p. 1170-71, 1185.) Nor does it stow based on cargo temperatures—either the internal temperature of the product or the outer surface of the container. (*Id.* at p. 1182-83.)

⁷⁴ MSC's Vande Velde authored general guidelines for stowage of dangerous goods that are used aboard its many vessels for hundreds of thousands of cargo containers. (ECF No. 1609, Bozzo Trial Test., p. 863-64.)

MSC USA's Charleston office creates the specific stowage plan for a vessel departing from a port within the United States. Antwerp's role is limited to its provision of stowage guidelines. Thus, the stowage plan for the *Flaminia* came out of the Charleston office and not Antwerp. (ECF No. 1478, Bozzo Trial Decl., p. 9 ¶ 39.)

⁷⁵ The vessel planner is trained and certified in hazardous cargo and exercises discretion in where dangerous goods should be stowed. Nonhazardous cargo is stowed based on stability and safety; there are parameters such as stack weight for a particular portion of the vessel.

Once a stowage plan has been finalized, the actual loading of cargo is performed by stevedores at NOT. The stevedores here followed normal protocols to work with the ship's officers to ensure that the cargo was stowed according to MSC's stowage plan. (ECF No. 1478, Bozzo Trial Decl., p. 9 ¶ 39.) After cargo is stowed aboard a vessel, MSC issues a Sea Waybill, which it provides to its customers; the Sea Waybill documents carriage of the cargo. (Id. at p. 9 ¶ 40.) Thus, MSC's Sea Waybills do not play any operational function in the stowage plan or the approval of dangerous goods, as those tasks have been completed by the time these documents issue.⁷⁶ (Id. at p. 9 ¶ 41.)

N. Chemtura

Stolt, Deltech, NSB, and Conti have all asserted negligence claims against Chemtura. The basic assertion is that Chemtura breached its duty to warn regarding its hazardous DPA cargo. As discussed in the legal conclusions below, the Court is not persuaded.

As a factual matter, the claims against Chemtura are based on (1) an allegedly improper omission of the word "molten" in the DPA's "proper shipping name," and (2) a failure to placard the exterior of ISO containers containing DPA

The planner uses his own discretion along with the Computer Automated Stowage Planning ("CAPS") program. With regard to dangerous cargo, the planner uses the IMDG Code and well as the vessel's letters of compliance issued by the CAPS system.

⁷⁶ While Deltech had a preference for storage above deck, this instruction was not included in the Shipping Protocols in effect at the time of the incident. (DX 344.) Levine testified that storage of the DVB ISO containers below deck was acceptable to Deltech. (ECF No. 1605, Levine Trial Test., p. 545.)

with a red thermometer showing that the contents had been heated. The Court is not persuaded that either of these should have occurred. Neither these actions nor other warnings were required under the IMDG, nor could they reasonably have been anticipated by Chemtura as necessary. What occurred, in sum, is that ISO containers containing heated DPA were stowed near Tanks I, J, and K. Because of this, heat emitted from the DPA containers had some impact on the overall heat conditions for Tanks I, J, and K. This heat contribution is causally linked to the explosion aboard the *Flaminia*, but the causal impact was not foreseeable.

DPA is a solid that is heated into liquid form to be filled into ISO containers for shipment. The target loading temperature for DPA is 70° to 74°C, which is well below the threshold set forth in the IMDG Code for an Elevated Temperature Material (“ETM”).⁷⁷ Only ETM’s must be labelled “molten,” and only ETM cargo must bear placards with a red thermometer. The DPA cargo here was in normal, heated liquid state when accepted for shipping and was expected to cool over time.

The DPA’s IMDG Classification is:

Proper Shipping Name: ENVIRONMENTALLY HAZARDOUS
SUBSTANCE, LIQUID, N.O.S.
Class: 9
UN ID#: UN3082
Packing Group: III

⁷⁷ The IMDG defines Elevated Temperature Material (“ETM”) as liquids offered for transport at temperatures at or above 100°C (212°F), and solids offered for transport at temperatures at or above 240°C (464°F).

(ECF No. 1493-20, DX 647_005.) The MSDS accompanying the DPA cargo contains this same IMDG information and does not mention possible heat emission from any ISO containers in which the product is stored.

By 2012, Chemtura was shipping approximately 500 containers of DPA a year. (ECF No. 1473, Marcel Trial Decl., p. 8 ¶ 25.) Ernest Marcel, Chemtura's Global Manager of Dangerous Goods Compliance and Emergency Response,⁷⁸ testified that he is not aware of any heat-related incident or complaint in connection with Chemtura's shipping or handling of DPA (id. at p. 5-6 ¶ 15), nor is he aware of any NVOCC or ocean carrier ever expressing to Chemtura any concern regarding the temperature of the ISO containers containing DPA (id. at p. 9 ¶ 29).

W. Eugene Sanders, an expert in dangerous goods classification, testified on behalf of Chemtura. (ECF No. 1615, Sanders Trial Test., p. 1775-77.) The Court found him knowledgeable and his opinions reasoned and helpful. The Court relies on a number of his opinions, particularly those relating to whether industry standard supports that use of the term "molten" should have been associated with Chemtura's DPA cargo. (See ECF No. 1609, Marcel Trial Test., p. 1135-40.) The Court finds it does not. Marcel confirmed that the IMDG requires that the term

⁷⁸ Marcel has held this position for 11 years, including during the time of the Flaminia incident. (ECF No. 1473, Marcel Trial Decl., p. 2 ¶ 2.) Marcel's duties include ensuring that Chemtura's hazardous products are shipped in compliance with all local, state, federal and international requirements. (Id. at p. 2 ¶ 3.) This includes the classification of hazardous products consistent with those requirements. (Id.) That classification information is included in the transport information that appears in Section 14, the transportation section, of the Safety Data Sheet ("SDS"). (Id.)

“molten” be used when a product constitutes an ETM.⁷⁹ He also confirmed that the IMDG requires that ISO containers contain external temperature warnings when they are at what the IMDG defines as “elevated temperatures.” Here, the shell of the DPA ISOs was never higher than 70°C (158°F). Thus, Chemtura’s DPA product did not meet the IMDG definition of molten and industry practice was not to apply that term unless required by the IMDG.

In addition, the parties disputed whether the DPA cargo at issue was correctly identified according to the relevant IMDG Code as a “3082 hazardous good,” as opposed to a “3077 hazardous good.” The number “3082” designates the good as liquid, while “3077” designates it as solid. (ECF No. 1474, Sanders Trial Decl., p. 13 ¶ 44.) (This is an important distinction because, in the event of a container breach, liquid cargos present a greater risk than solid cargos. (ECF No. 1473, Marcel Trial Decl., p. 7 ¶ 20.)) Because, as discussed above, Chemtura’s DPA was offered for shipment as a liquid, the “3082” designation was correct.

O. Actions by NSB and Conti

Once loaded, the voyage is handled by a Captain, officers, and crew hired to operate the vessel. Here, while the Flaminia was owned by Conti, it was time chartered by MSC. (ECF No. 824-4, PX 153 (Flaminia Registry); ECF No. 1478, Bozzo Trial Decl., p. 7 ¶ 26; ECF No. 1480, Kutz Trial Decl., p. 7 ¶ 24.) However, on

⁷⁹ In all events, because MSC only used the IMDG category number as a basis for stowage, had the word “molten” been used in the DPA’s proper shipping name, it would not have changed the way in which the cargo was stowed.

the voyage, it was operated by NSB. A significant issue at trial was whether the vessel was seaworthy as that term is understood in the admiralty context, that is, whether it had the appropriate equipment and systems in working order. In addition, NSB was responsible for ensuring that its vessel was properly manned with an appropriately and adequately trained Captain, officers, and crew. Having carefully considered the evidence, the Court is persuaded that the *Flaminia* was seaworthy and the Captain, officers, and crew were properly trained and acted reasonably. In all events, it was not reasonably foreseeable that actions they took could or would have caused the gas explosion of auto-polymerized DVB vapor.

1. Certification and Training of the Captain, Officers, and Crew

Henning Scharringhausen, the Head of Human Resources-Shore for NSB, testified live at trial regarding the personnel aboard the *Flaminia*. NSB took appropriate steps to ensure that all officers and crew were properly qualified and trained for their roles aboard the *Flaminia*. (ECF No. 1472, Scharringhausen Trial Decl., p. 3 ¶ 16.) All officers and crew aboard the *Flaminia* had received required training in basic firefighting.⁸⁰ (*Id.* at p. 3 ¶ 19.)

NSB utilizes several methods to ensure training quality and to ensure that appropriate procedures are followed by its crews. It uses a Quality Management

⁸⁰ There are various requirements that must be met: International Maritime Organization (“IMO”) model course, Standards of Training, Certification and Watchkeeping for Seafarers (“STCW Convention”) and Standards of Training, Certification and Watchkeeping Code (“STCW Code”). (ECF No. 1472, Scharringhausen Trial Decl., p. 3 ¶ 16.) In addition, SOLAS, through the International Safety Management Code (“ISM”), requires proper fire and emergency drills. SOLAS, through the ISM, requires that the ship has firefighting pre-plans for various emergency scenarios.

System based on national and international shipping industry requirements. Among those requirements are the International Safety Management (“ISM”) Code and SOLAS.⁸¹ (ECF No. 1471, Moeller Trial Decl., p. 6 ¶ 27.) NSB’s Quality Management Manual covers a wide array of topics including emergency preparedness, organizational structure, responsibilities and qualifications of officers and crew, drills and training, and vessel maintenance. (Id. at p. 6 ¶ 29.) It also incorporates a fire safety operational booklet. (Id. at p. 12-13 ¶ 52.) As part of regular training, each crew member had to understand alarm signals, the location of muster stations, and his or her role during firefighting and how to operate various safety equipment. (Id.) In addition, a copy for the Manual for Ship Safety Service Training (Lifeboat and Firefighting Service) was aboard the *Flaminia*. (Id. at p. 13 ¶ 53.) This Manual also provided guidance on a number of topics including the organization of the firefighting command and units, basic principles of fire protection, firefighting equipment and systems and how to react to fires. (Id. at p. 13 ¶ 54.)

Basic firefighting education and training includes fire prevention, selection and use of fire extinguishers and suppression systems, fire chemistry, fire behavior, and how to fight fires generally aboard a vessel. (ECF No. 1472, Scharringhausen Trial Decl., p. 4 ¶ 20.) Following the *Flaminia* incident, Scharringhausen confirmed that the crew aboard the *Flaminia* had the appropriate qualifications and certifications. (ECF No. 1611, Scharringhausen Trial Test., p. 1312-13.) In addition to basic firefighting, all of NSB’s nautical and engineering officers were trained, tested and qualified in advanced firefighting, the training for which includes using fire suppression systems (such as the CO₂ fire suppressions system). (Id. at p. 4 ¶¶ 21, 22.)

⁸¹ For a fire in a cargo hold, NAVECS listed several possible tasks, including setting up for boundary cooling, closing ventilation to the affected space, releasing CO₂, and checking the IMO’s Emergency Response Procedures for Ships Carrying Dangerous Goods Guide. (ECF No. 1471, Moeller Trial Decl., p. 14 ¶ 61.)

In 2012, NSB also used a computer program designed to assist with training and planning drills for emergency situations on board NSB-managed ships, including the *Flaminia*. (*Id.* at p. 13 ¶ 56.) This is referred to as the NAVECS system. (*Id.*) Using a series of menus and inputs, the NAVECS program progressively guided the user through steps needed to address a wide range of emergency situations (e.g., a grounding, fire, man overboard, etc.). (*Id.* at p. 14 ¶ 57.) Paper versions of various checklists in NAVECS were also located in a binder on the navigation bridge of the *Flaminia*. One of those checklists included an emergency plan for a fire in a hold. (*Id.* at p. 14 ¶¶ 59-61.)

The parties presented substantial evidence regarding whether the crew's response to the emergency aboard the *Flaminia* fell within the appropriate standard of care. It did. In making this determination, the Court has considered a variety of evidence including the testimony from two firefighting experts: NSB/Conti called Captain Brian Hall, and Stolt called Captain Sean P. Tortora. Hall asserted that the actions taken by NSB/Conti fell within the range of those a reasonable firefighter would expect, and Captain Tortora testified that the opposite was the case. The Court found Captain Hall more persuasive and therefore relies on his testimony and not on that of Captain Tortora.

Tortora testified that NSB failed to properly drill and train its officers and crew, leading to the ignition of the explosion and inadequate response to the resulting fire. (ECF No. 1492, Tortora Trial Decl., p. 4, ¶ 13.) The Court's factual determination is to the contrary. Tortora's opinions primarily focus on training

with regard to the need to “starve” a fire of oxygen. (*Id.* at p. 5-6 ¶ 15.) The Court has previously found that the fire resulted from the opening of the manlid that caused a spark, not the introduction of oxygen that may have caused a backdraft. See Flaminia Phase I Opinion, 2018 WL 526549, at *31.

Tortora also testified regarding the process of getting CO₂ into Hold 4; he conceded that each step was accomplished by the crew aboard the *Flaminia*. (ECF No. 1615, Tortora Trial Test., p. 1742-61.) While he focused on a time lapse between the first alarm and the Captain’s command to release the CO₂, the Court is persuaded that this was not an undue delay.

Tortora opined that certain actions by officers and crew and circumstances aboard the *Flaminia* during the emergency led to disorder aboard the vessel.⁸² The crew reaction was not unusual under the circumstances—there was an emergency. In all events, there is insufficient evidence that any disorder worsened conditions or contributed to the loss. It was reasonable for the crew to believe that they were responding to a fire. They mustered timely and appropriately; they took steps to assess conditions in Hold 4; and they checked the dangerous goods list. All of these and other steps were appropriately taken.

⁸² The command to release CO₂ came at 6:30; a CO₂ log shows that, within 12 minutes, CO₂ was in the process of being released. Under these circumstances, this was appropriate. (The parties spent a fair amount of time on the fact that the CO₂ valves were mislabeled. In fact, however, despite such mislabeling, the valves were in fact turned in the correct direction. (ECF No. 1615, Tortora Trial Test., p. 1760-61; ECF No. 1492, Tortora Trial Decl., p. 33-34 ¶ 70.)) The release of CO₂ also triggered a shutdown of the main engine, but that did not delay or impede the release of the CO₂ into the hold. (ECF No. 1615, Tortora Trial Test., p. 1756-57.) Thus, while the parties discussed this at trial, no one could point to any actual impact that the shutdown had on causing or furthering the loss.

Captain Brian Hall⁸³ testified that the Captain, officers, and crew of the *Flaminia* were appropriately trained and drilled in firefighting procedures and equipment, and were in compliance with applicable regulations.⁸⁴ (ECF No. 1468, Hall Trial Decl., p. 2-3 ¶¶ 9-13.) The Court credits this testimony. The Captain and officers of the *Flaminia* who were designated to control firefighting operations aboard ship were in compliance with Section A-VI/1-3 (Mandatory Minimum Requirements for Training in Advanced Firefighting of the STCW Code). (*Id.* at p. 3 ¶ 10.)

2. The CO₂ System⁸⁵

The *Flaminia* was equipped with a fixed CO₂ gas fire extinguishment system,⁸⁶ a fire detection system and alarm system, and a water supply fire main system with two fire pumps.⁸⁷ (ECF No. 1471, Moeller Trial Decl., p. 15 ¶ 64.) The

⁸³ The Court found Captain Hall's credentials impressive and that he was a particularly impressive witness: He has taught advanced firefighting for 20 years, has trained the NY City Fire Department, Marine Division, and has a wealth of additional experience. (ECF No. 1615, Hall Trial Test., p. 1892-96; ECF No. 1468, Hall Trial Decl., p. 1-2 ¶¶ 1-5.) Hall was knowledgeable, consistent, and logical. The Court relies heavily on his opinions.

⁸⁴ There were firefighting drills in March, April, May, June, and July—the day before the incident.

⁸⁵ The crew and officers aboard the *Flaminia* were properly drilled and trained in the *Flaminia*'s CO₂ system. (ECF No. 1471, Moeller Trial Decl., p. 26 ¶ 108.)

⁸⁶ The *Flaminia* also had separate fire detection systems for the engine room, cargo holds, and accommodation space. The Fire Detection and Monitoring Air Sampling System for the cargo holds was capable of reporting an alarm to the navigation bridge. (*Id.* at p. 16 ¶ 66.) For cargo holds 1-7, fire hydrants were located on the main deck at the aft end of each cargo hold on both the port and starboard sides. (*Id.* at p. 16 ¶ 68.)

⁸⁷ Hall confirmed that as between different types of containerships, the fixed CO₂ systems are similar and the experience of crew members on one type of ship would carry over to another. (ECF No. 1615, Hall Trial Test., p. 1906-07.) Thus, the Court does not find the lack of a specific "*Flaminia* CO₂ system drill" to have been unreasonable or particularly

Flaminia was properly equipped in accordance with applicable regulations. (Id. at p. 17 ¶ 70; ECF No. 1615, Hall Trial Test., p. 1929-30.) Its CO₂ system included 330 cylinders of CO₂ (plus spares); these canisters had been periodically inspected and serviced (id. at p. 15 ¶ 65), including only a few months prior to the Flaminia incident (ECF No. 1471, Moeller Trial Decl., p. 17 ¶¶ 71, 74).⁸⁸ Indeed, on July 12, 2012, the system had been visually inspected by the Chief Officer. (Id. at p. 17 ¶ 72.)

Jeorg Dehde, the Head of Engine Operation Department, testified live. During his 26-year tenure at NSB he has also been a Chief Engineer. (ECF No. 1470, Dehde Trial Decl., p. 1 ¶ 6.) He had previously sailed as an engineer aboard containerhips equipped with fixed CO₂ systems like that on the Flaminia. (Id. at p. 2 ¶ 12.) As Chief Engineer he was responsible for maintaining the CO₂ system aboard his ship and, in case of emergency, activating it. (Id. at p. 2 ¶ 14.) In addition, while aboard vessels, he participated in fire drills that involved the simulated release of CO₂ gas to an enclosed space. (Id. at p. 2 ¶ 15.) During his

indicative of overall training. Hall persuasively explained to the Court why the firefighting training and drilling here was sufficient.

Hall also testified persuasively that the firefighting equipment was proper. (ECF No. 1615, Hall Trial Test., p. 1929-31.) Moreover, none of the CO₂ system deficiencies presented a particular issue with regard to effectively addressing the circumstances aboard the Flaminia. (ECF No. 1468, Hall Trial Decl., p. 6-13 ¶¶ 24-54.)

⁸⁸ The CO₂ system aboard the Flaminia had been periodically and appropriately inspected by Germanischer Lloyd, the relevant classification society. (ECF No. 1470, Dehde Trial Decl., p. 3 ¶ 16.) DeVries, a shore-based maintenance company, also inspected Flaminia's CO₂ system on an annual basis. (Id.; ECF No. 1613, Dehde Trial Test., p. 1513.) There was simulated testing of the CO₂ system during these inspections. (ECF No. 1613, Dehde Trial Test., p. 1513-15.)

testimony, he demonstrated detailed knowledge of how the CO₂ system worked. (See, e.g., ECF No. 1613, Dehde Trial Test., p. 1513-19.)

Following the Flaminia incident, Dehde inspected its CO₂ system. He determined that it utilized a booster system and that it had been incorrectly installed insofar as there was a cross connection of two small copper tubes. (ECF No. 1470, Dehde Trial Decl., p. 10 ¶ 27.) This cross connection did not, however, prevent the CO₂ system from releasing gas into the hold when activated. (Id. at p. 11 ¶ 30.)

Stolt spent a fair amount of time at trial attempting to show that the CO₂ system and associated placards (signage) were defective or deficient in important ways. Having wallowed in the CO₂ system at length, the Court finds that while the so-called placards may have been useful instructional material, in the fast paced events leading up to the explosion, they were not essential tools for the proper deployment of the CO₂; any deficiencies in the placards played no role in the explosion. In addition, while the CO₂ system was not perfectly designed or installed, it worked appropriately.

The Chief Engineer of the Flaminia and an employee of NSB, Janusz Tarnowski, testified live. (ECF No. 1613, Tarnowski Trial Test., p. 1538.) He joined the crew of the Flaminia in June 2012. By this point in his career, he had been qualified, licensed, and working as a Chief Engineer for about 10 years on board container ships. (ECF No. 1469, Tarnowski Trial Decl., p. 2 ¶ 7.) He had a great deal of familiarity with the type of CO₂ system aboard the Flaminia. (Id. at p. 3-5

¶ 13.) The CO₂ system on the Flaminia had the same basic components as those on board other ships he had worked on: a set of cylinders filled with CO₂ gas, a main manifold in which the released CO₂ gas can collect, a valve between the main manifold and the 3-way valve manifold, a 3-way valve manifold to direct the CO₂ to a particular cargo hold and isolate the corresponding smoke detection system; and piping from the 3-way valve manifold to the individual cargo holds. (Id.) Tarnowski testified that the CO₂ system was not complicated and was “very easy” to operate. (Id. at p. 6 ¶ 14.) Based on his experience with other ships, Tarnowski knew how to release the CO₂ gas to Hold 4.⁸⁹ (Id. at p. 6 ¶ 16.) The Court finds Tarnowski had and used all the appropriate skills to address reasonably expected conditions aboard the Flaminia.

In sum, the design, installation, and deployment of the CO₂ system did not contribute to the loss. And, importantly, failure to release additional CO₂, and thereby to inert the gaseous vapor cloud, was not unreasonable. Under the circumstances, the crew reasonably believed they were dealing with a fire (as there was a smoky cloud emitting from the hold, and the smoke alarms sounded). It was not unreasonable for the crew to address the situation as if it were a fire. Moreover,

⁸⁹ Tarnowski was also appropriately trained and certified in seafarer competency. (ECF No. 1469, Tarnowski Trial Decl., p. 2 ¶ 8.) When Tarnowski first joined the Flaminia in 2012, he visited the CO₂ room to review its design including various valves and system components of the CO₂ fire suppression system for the cargo holds. (Id. at p. 3 ¶ 10.) As part of the changing over of command, he received a “Hand-Over Engine” form for the Flaminia that discussed the equipment of the ship; that form did not flag any issues with the CO₂ system. (Id. at p. 3 ¶ 11.) In addition, he toured the Engine Room, the Steering Gear Room and the CO₂ Room with the outgoing chief engineer; no operational issues with the CO₂ system were described. (Id. at p. 3 ¶ 12.)

it was not foreseeable that failure to release additional CO₂ would contribute to a gaseous explosion.

3. Venting Hold 4

An ongoing issue at this trial and as previewed in Phase I was whether NSB acted improperly in failing to vent Hold 4 on the days leading up to the July 14 explosion. It bears noting that the evidence on venting is circumstantial. Based on the evidence in Phase I, the Court found that the vents to Hold 4 had been closed before the incident and that this lack of ventilation contributed to the heating of the DVB. These findings stand, although based on purely circumstantial evidence. Even assuming this fact does not, however, equate to unreasonable action(s) by NSB.

First, the evidence at Phase II clearly established that whether to open vents or not is a decision made by the crew, and is not part of temperature control for a hold. In addition, even with vents closed, a cargo hold is not airtight. (ECF No. 1471, Moeller Trial Decl., p. 20 ¶ 83.) Oxygen enters a hold in a variety of ways, only one of which is through vents.⁹⁰ (Id. at p. 21 ¶ 89.) The vents were closed on the Flaminia.

NSB left the decision of whether to open the vents of the cargo holds to the cargo officer, which aboard the Flaminia was Chief Officer Siuta. (Id. at p. 20 ¶ 84.)

⁹⁰ This fact has additional relevance with regard to the foreseeable impact of opening the manlid: the crew could reasonably have assumed that the manlid was not preventing oxygen from entering the hold and thus that its continued closure was not necessary to starving the hold of oxygen.

He died as a result of the explosion aboard the *Flaminia*. Chief Officer Siuta was therefore responsible for deciding when to leave the vents open and to run its associated mechanical fans. (*Id.*) The decision to keep the vent flaps of the *Flaminia* closed did not violate any NSB or industry practice. Based on this, no one at Stolt or Deltech should have assumed that the hold where the DVB or DPA cargo was stowed would be vented; they should have assumed no venting or made specific arrangements otherwise.

V. CONCLUSIONS OF LAW⁹¹

A. Conclusions by Claim

As set forth at the outset of this Opinion, the parties have asserted a variety of claims against one another. In sum, when the proper legal principles are applied to the Court’s factual findings, the following determinations, laid out below, are clear:

⁹¹ This action concerns claims based on contracts for the carriage of goods by sea and torts that occurred at sea. As such, the contracts at issue are maritime contracts and the torts are maritime torts within the admiralty jurisdiction of the Court pursuant to 28 U.S.C. § 1333(1). See *New England Mut. Marine Ins. Co. v. Dunham*, 78 U.S. 1, 29 (1870) (contract); *Thypin Steel Co. v. Asoma Corp.*, 215 F.3d 273, 277-78 (2d Cir. 2000) (contract); see, e.g., *Jerome B. Grubart, Inc. v. Great Lakes Dredge & Dock Co.*, 513 U.S. 527, 531-34 (1995) (tort); *In re Petition of Germain*, 824 F.3d 258, 265-70 (2d Cir. 2016) (tort). And “[w]ith admiralty jurisdiction comes the application of substantive admiralty law.” *E. River S.S. Corp. v. Transamerica Delaval, Inc.*, 476 U.S. 858, 864 (1986). “Absent a relevant statute, the general maritime law, as developed by the judiciary, applies.” *Id.*; see also *Norfolk S. Ry. Co. v. Kirby*, 543 U.S. 14, 22-24 (2004); *ProShipLine, Inc. v. Aspen Infrastructures, Ltd.*, 585 F.3d 105, 110 (2d Cir. 2009).

1. Tort Claims

- As to NSB and Conti: There is insufficient factual support for a breach of any duty of care as to the Captain, officers, and crew with regard to their training or activity aboard the vessel including their fire response, venting of Hold 4, and opening of the manlid. In addition, neither NSB nor Conti acted in derogation of any duty with regard to the CO₂ system design or installation, or its deployment at the time of the emergency.⁹²
- As to Chemtura: There is insufficient factual support for breach of any duty of care by Chemtura whether framed as a negligent failure to warn or strict liability claim.
- As to NOT: There is insufficient factual support for breach of the duty of care by personnel at NOT (and therefore, the issue of whether MSC is responsible for NOT's conduct is moot).
- As to MSC: There is insufficient factual support for breach of the duty of care as to MSC whether with regard to oversight of NOT, stowage aboard the Flaminia, or general handling of the DVB and DPA cargo here.

⁹² But in addition, because of the lack of any actual fault by Conti and NSB, they would in any event be entitled to a defense under the Fire Statute of the Limitation Act, and they are further entitled to protections of the Fire Exception under COGSA.

- As to Deltech: There is ample factual support that Deltech breached several duties of care under COGSA, general maritime law, and tort principles. Deltech breached its duties by allowing a shipment of DVB80 to be booked in June for departure from NOT and compounded this error by allowing early filling of Tanks I, J, and K. Further, it failed to take actions it could have taken to ensure measurement of the temperature of the ISO containers before loading onto the Flaminia, or recalling the Tanks before loading aboard the vessel altogether.
- As to Stolt: There is also ample factual support that Stolt breached a number of its duties of care by not ensuring that information regarding DVB's heat sensitivity and necessary handling instructions were effectively conveyed to NOT and MSC.

2. Contract Claims

- General contract principles provide that Conti may recover a General Average pursuant to Clause 22 of the Sea Waybills.
- General contract principles also support MSC's contract claim pursuant to its Service Contract and Sea Waybills against both Stolt and Deltech.
- General contract principles do not support Stolt's contract claim against BDP (damage is an essential element in any contract claim, and there is insufficient evidence to support damage on this claim).

3. Contribution and Indemnification

- MSC, along with its subcontractors Conti and NSB, are entitled to full indemnification from Stolt and Deltech under the terms of the Sea Waybill.
- Deltech and Stolt's liability shall be apportioned according to their fault: 55% and 45% respectively. If necessary, each party may bring an action for contribution accordingly.

Set forth below is the Court's more detailed analysis of the parties' claims based on its findings of fact.

B. General Negligence

A maritime based negligence claim requires proof of four elements: (1) the existence of a duty of care; (2) breach of that duty; (3) a causal connection between the conduct resulting in the breach and injury; and (4) actual loss, injury, or damage. See Becker v. Poling Transp. Corp., 356 F.3d 381, 388 (2d Cir. 2004); see also Pearce v. United States, 261 F.3d 643, 647 (6th Cir. 2001) (The elements of a negligence claim under general maritime law "are essentially the same as land based negligence under the common law.")

The duty of care, and breaches of that duty, may arise both from a failure to conform with regulatory requirements, or with standard industry or reasonable practice. See, e.g., In re M/V DG Harmony, 533 F.3d at 94. Failure to conform with governing regulatory requirements is not ipso facto a demonstration of a breach of the duty of care and proof of negligence—but may provide evidence (even strong

evidence) of such. See Williams v. KFC Nat. Mgmt. Co., 391 F.3d 411, 430-31 (2d Cir. 2004) (noting that negligence can consist of “violation of some statutory safety regulation”); see, e.g., Otal Investments Ltd. v. M.V. Clary, 494 F.3d 40, 50-51 (2d Cir. 2007) (discussing the modern version of the Pennsylvania doctrine, which creates a presumption of negligence for those who violate a statute relevant to the harm caused).

Relevant statutory obligations are set forth in several statutory schemes, the most important of which is the COGSA, see 46 U.S.C. § 30701 (note). COGSA applies “to all contracts for carriage of goods by sea” from the United States. COGSA § 13. The “term ‘contract of carriage’ applies only to contracts of carriage covered by a bill of lading or any similar document of title.” COGSA § 1(b). Therefore, for cargo carried under a negotiable bill of lading, COGSA applies as a matter of law. See e.g., Senator Linie GmbH & Co. KG v. Sunway Line, Inc., 291 F.3d 145, 153 (2d Cir. 2002). For cargo carried under a sea waybill or nonnegotiable bill of lading, COGSA does not apply as a matter of law, but COGSA can apply as a matter of contract between the parties based on the inclusion of U.S. Trade Clause in the relevant contract. See e.g., Starrag v. Maersk, Inc., 486 F.3d 607, 612 n.5 (9th Cir. 2007); Colgate Palmolive Co. v. S/S Dart Canada, 724 F.2d 313, 315 (2d Cir. 1983).

To enforce their rights under COGSA, shippers and carriers play a “ping-pong game of burden-shifting” mandated by Sections 3 and 4 of COGSA. Sun Co. v. S.S. Overseas Arctic, 27 F.3d 1104, 1109 (5th Cir. 1994) (internal quotation marks

omitted); see also Tenneco Resins, Inc. v. Davy Intern., A.G., 881 F.2d 211, 213 (5th Cir. 1989); O'Connell Machinery Co. v. M.V. Americana, 797 G.2d 1130, 1133 (2d Cir. 1986). As the Fifth Circuit has explained:

[1] To present a prima facie case under COGSA for the loss of cargo, a charterer [or shipper] must initially prove that the carrier failed to deliver all of the goods initially loaded. . . . [2] Once the charterer [or shipper] presents its prima facie case, the burden shifts to the carrier to prove either that it exercised due diligence in preventing the loss of the cargo or to prove that the loss was caused by at least one of the exceptions set out in [Section 4(2)] of COGSA. [3] If the carrier successfully rebuts the charterer's [or shipper's] prima facie case, the burden returns to the charterer [or shipper] to prove that the carrier's negligence was at least a concurring cause of the loss. [4] If the charterer meets this challenge, the carrier must finally satisfy the heavy burden of proving the percentage of loss due to its negligence and the percentage of loss due to the charterer's [or shipper's] negligence. If the carrier fails to prove the proportionate fault of each of the parties, the carrier becomes liable for the entire loss.

Sun Co., 27 F.3d at 1109 (citations omitted and numbers added). In this case, only the final three factors are at issue. The first factor (loss of cargo) is not disputed.

Several provisions of COGSA are relevant to the parties' respective rights and duties in this matter.

Section 2 provides:

[U]nder every contract of carriage of goods by sea, the carrier in relation to the loading, handling, stowage, carriage, custody, care and discharge of such goods, shall be subject to the responsibilities and liabilities and entitled to the rights and immunities set forth in sections 1303 and 1304 of this title . . .

Section 3 provides:

(1) Seaworthiness

The carrier shall be bound, before and at the beginning of the voyage to exercise due diligence to—

- (a) Make the ship seaworthy;
- (b) Properly man, equip, and supply the ship;
- (c) Make the holds, refrigerating and cooling chambers, and all other parts of the ship in which goods are carried, fit and safe for their reception, carriage and preservation.

(2) Cargo

The carrier shall properly and carefully load, handle, stow, carry, keep, care for and discharge the goods carried.

(3) Contents of Bill

After receiving the goods into his charge the carrier, or the master or agent of the carrier, shall, on demand, of the shipper, issue to the shipper a bill of lading showing among other things—

- (a) The leading marks necessary for identification . . .
- (b) . . .
- (c) The apparent order and condition of goods: Provided, that no carrier, master, or agent of the carrier, shall be bound to state or show in the bill of lading any marks, number, quantity or weight which he has reasonable ground for suspecting not accurately to represent the goods actually received, or which he has had no reasonable means of checking.

(4) Bill as Prima Facie Evidence

Such a bill of lading shall be prima facie evidence of the receipt by the carrier of the goods described therein described in accordance with paragraphs (3)(a), (b) and (c) of this section . . .

(5) Guaranty of Statements

The shipper shall be deemed to have guaranteed to the carrier the accuracy at the time of shipment of the marks, number, quantity, and weight, as furnished by him; and the shipper shall indemnify the carrier for all loss, damages and expenses arising or resulting from inaccuracies in such particulars. The right of the carrier to such indemnity shall in no way limit his responsibility and liability under the contract of carriage to any person other than the shipper.

Section 3(8) further provides:

(8) Limitation of liability for negligence

Any clause, covenant, or agreement in a contract of carriage relieving the carrier or the ship from liability for loss or damage to or in connection with the goods, arising from negligence, fault, or failure of the duties and obligations provided in this section, or lessening such liability otherwise than as provided in this chapter [this note], shall be null and void and of no effect . . .

Section 4 of COGSA provides:

(1) Unseaworthiness

Neither the carrier nor the ship shall be liable for loss or damage arising or resulting from unseaworthiness unless caused by want of due diligence on the part of the carrier to make the ship seaworthy, and to secure that the ship is properly manned, equipped and supplied, and to make the holds . . . are carried fit and safe . . .

. . . Whenever loss or damage has resulted from unseaworthiness, the burden of proving the exercise of due diligence shall be on the carrier or other persons claiming exemption under this section.

(2) Uncontrollable causes of loss

Neither the carrier nor the ship shall be responsible for loss or damage arising or resulting from—

- (a) Act, neglect, or default of the master, mariner, pilot, or servants of the carrier in the navigation or in the management of the ship;
- (b) Fire, unless caused by the actual fault or privity of the carrier . . .
- (i) Act or omission of the shipper or owner of the goods, his agent or representative . . .
- (n) insufficiency of packing [or] . . .
- (q) Any other cause arising without the actual fault and privity of the carrier and without the fault or neglect of the agents or servants of the carrier, but the burden of proof shall be on the person claiming the benefit of this exception to show that neither the actual fault or privity of the carrier nor the fault or neglect of the agents or servants of the carrier contributed to the loss or damage.

(3) Freedom from negligence

The shipper shall not be responsible for loss or damage sustained by the carrier or the ship arising or resulting from any cause without the act, fault, or neglect of the shipper, his agents or his servants.

SOLAS, the IMDG, and HMR are also applicable to the general negligence claims at issue.⁹³

As a threshold matter, the IMDG provides that:

4.2.1.3: Certain substances are chemically unstable. They are accepted for transport only when the necessary steps have been taken to prevent their dangerous decomposition, transformation or polymerization during transport. To this end, care shall in

⁹³ SOLAS, the IMDG, and the HMR are more relevant to the negligent failure to warn claims, discussed below, because they mainly impose duties of disclosure on shippers of dangerous goods.

particular be taken to ensure that shells do not contain any substances liable to promote these reactions.

And,

4.2.1.4: The temperature of the outer surface of the shell, excluding openings and their closures, or of the thermal insulation, shall not exceed 70°C during transport. When necessary, the shell shall be thermally insulated.

Additionally, IMDG Code 5.1.1.3.1 and HMR provide that a carrier must ensure that it receives a valid DGD before transporting a container of dangerous goods. 49 C.F.R. § 176.24(a). Since shipping containers, including tank containers, are sealed, the industry custom is for carriers to rely on these DGDs and to assume, absent any obvious errors, that they are accurate. (ECF No. 1489, Ahlborn Trial Decl., p. 19 ¶ 66 (citing 49 C.F.R. § 171.2(f)).)

Furthermore, the IMDG provides various stowing and segregation requirements that ocean carriers need to observe. See SOLAS, Ch. VII, Reg. 3 (5th ed. 2009) (requiring that carriers comply with the IMDG's rules for stowage and segregation of goods). Chapter 3.2 specifies such requirements for each UN number. Specifically, for UN 3082 items, the IMDG does not require ventilation when stowage is below deck and, moreover, does not require that such goods be kept any particular distance from a vessel structure or other cargoes.

With regard to these laws, the Court's factual findings above support the following:

- Whether by way of negotiable Bill of Lading or contract, COGSA applies to the cargo carried aboard the Flaminia; and

- Neither the carrier (MSC) nor the operator (NSB) violated any of their duties under COGSA, the IMDG Code, SOLAS, or the HMR.

The Court now turns to the parties' responsibilities for diverse negligence claims. As to Conti and NSB, while they had a duty of seaworthiness and a duty to adequately man the ship, the Court's factual findings do not support a breach of the duties. In this regard, three particular facts are worth pausing on: (1) a failure to vent Hold 4, (2) the CO₂ system, and (3) opening the manlid. The Court does not find any breach with regard to any of them.

With regard to venting, this Court previously found that a failure to vent Hold 4 contributed to the heat conditions that led to runaway auto-polymerization. However, the Court does not find that the Captain, officers, or crew aboard the *Flaminia* did anything wrong in that regard. The evidence at trial supports venting as a moisture control measure, not a temperature control tool. In any event, the industry standard is to leave a decision as to whether or not to vent a hold to the Captain. No party—not the shipper or the carrier—has any basis to assume that a hold will or will not be vented. For his part, the Captain of the *Flaminia* had no information that would have suggested to him that venting Hold 4 was necessary to important temperature control. Thus, whether he decided to keep the vents closed throughout the voyage (pre-explosion) or was surprised that they were closed, neither scenario suggests fault on his part. Thus, the failure to vent Hold 4 did not breach any duty of care, and even if it did, an explosion such as that aboard the *Flaminia* was not a foreseeable result.

The parties spent much time on the question of whether various aspects of the CO₂ system, including its placarding, its valves, and its utilization on the morning of the explosion, were in breach of Conti's and NSB's duties to provide a seaworthy vessel and an adequately trained Captain, officers, and crew. They were not. The evidence easily supports this Court's conclusion that the CO₂ system was adequate to the task at hand and that neither the valves nor the placarding made a difference. In terms of release of CO₂, the Court previously found that had more CO₂ been released, the DVB vapor might have been rendered inert. This fact, however, does not mean that there is fault to be assigned. It was not foreseeable to the Captain, officers, or crew that the situation in Hold 4 was a vapor cloud of DVB, and not a fire. Thus, it was not foreseeable that additional CO₂ was necessary to inert a gas cloud. Instead, the Captain, officers, and crew reasonably believed they were dealing with a fire in Hold 4. This was based on a smoke alarm, suggestive of a fire, and a grey smoky cloud emanating from the Hold. Responding to these conditions as if there was a fire was appropriate.⁹⁴

Finally, while this Court previously found that crew activity (inter alia, opening the manlid) more likely than not created a spark that ignited the explosion, the Court does not assign fault for that act. It is certainly true that there was testimony at trial that opening a manlid is contrary to firefighting procedure. But

⁹⁴ The Court does not find that additional fire drills of any kind would have led to a different outcome here; the information needed to understand the situation—that DVB cargo had auto-polymerized—was not available to the Captain, officers, or crew aboard the *Flaminia*.

the primary reason for that is a desire not to provide oxygen to a fire. Here, the evidence also established that Hold 4 was not airtight and it is reasonable to infer that the Captain and officers of the vessel understood this. Thus, opening a manlid was reasonably not viewed as a way in which a fire would be oxygenated. In addition, the presence of the smoky cloud indicated that any fire was already oxygenated, and therefore that opening the manlid would not initiate oxygenation. And there was a reason to assume that opening a manlid and placing a hose into the Hold could assist in addressing what was believed to be a fire. In all events, even if opening the manlid was in breach of a duty of care, it was not reasonably foreseeable that an explosion of a vapor cloud of DVB would result. For all these reasons, the Court does not find that Conti or NSB bear fault here.

In terms of MSC, the Court does not find that it was negligent in terms of its general stowage or handling of DVB. As discussed above, the Court has found that MSC had not received effective disclosure of the particular nature of what was in Tanks I, J, and K—not just that they contained DVB, but that they had already been subjected to conditions that made them into ticking bombs. This lack of information led to stowage at NOT that could not reasonably have been expected to have led to auto-polymerization of inhibited DVB, and stowage aboard the vessel next to any particular cargo that was not an EMT. It was reasonable for MSC to assume that DVB cargo was manufactured and had been delivered in a manner

that would allow it to arrive safely at an overseas destination under normal voyage conditions (even though in reality, it was not).⁹⁵

C. Negligent Failure to Warn

The negligence claims here are based, first and foremost, on a failure to comply adequately with certain COGSA provisions that require disclosure of the nature and qualities of dangerous cargo and, second and relatedly, on a failure to comply with the IMDG Code and SOLAS. This is, in essence, a claim that a party has breach a duty to warn of reasonably foreseeable dangers. See International Mercantile Marine Co. v. Fels, 170 F. 275, 277 (2d Cir. 1909); see also Contship Containerlines, Ltd. v. PPG Industries, Inc., 442 F.3d 74, 78 (2d Cir. 2006); Ente Nazionale Pre L'Energia Electtrica v. Baliwag Navigation, Inc., 774 F.2d 648, 655 (4th Cir. 1985).

Generally, a negligent-failure-to-warn claim, as opposed to a general negligence claim, requires proof that the shipper failed to warn the carrier about dangers that the shipper “could not reasonably have been expected to be aware” and “that an absent warning, if given, could have impacted stowage.” Contship Containerlines, 442 F.3d at 78 (internal quotation marks omitted). To prove a negligent failure to warn, a party must establish: “(1) the defendant had a duty to warn because the cargo presented ‘dangers . . . of which the stevedore and ship’s master could not reasonably have been expected to be aware;’ (2) the defendant

⁹⁵ A normal voyage condition would include the possibility that a Captain, Officer, or crew member could close the vents of a hold.

breached that duty by failing to provide an adequate warning; and (3) the breach in duty caused (4) the resulting harm.” In re DG M/V Harmony, 533 F.3d at 94 (quoting Contship Containerlines, 442 F.3d at 78).

The first element—whether the shipper had a duty to warn based upon the carrier’s knowledge—is “ultimately a question of law.” Id. at 94-95. As the Second Circuit explained:

Whether a cargo posed dangers of which the [carrier] could not reasonably have been expected to be aware is principally a legal question that hinges on a legal judgment about what the carrier reasonably should have known. . . . [T]he reasonable awareness inquiry asks whether it would have been reasonable to expect the carrier to know of the specific type and degree of danger posed by the cargo at issue. Answering this question requires a fact-sensitive, ‘calibrated’ analysis of the cargo’s dangerousness and the extent to which that risk was different from risks commonly encountered by carriers.

Id. at 95 (internal quotation marks and citations omitted).

Two principles guide the Court in its analysis of the “dangers that are normally associated with cargo.” Id. First, “when receiving a cargo . . . the dangerousness of which is not open and obvious, a carrier may rely on the shipper’s attestations as to the cargo’s characteristics.” Id. Second, “when evaluating the legal significance of apparently contradictory information in the shipper’s description or warning, the specific controls the general.” Id. Under this standard, other carriers have conceded that the carrier “could be expected to be aware of the dangers detailed in the IMDG Code.” Contship Containerlines, 442 F.3d at 78.

Carriers are generally not expected to be aware, without additional warning by the shipper, of dangers greater than those detailed in the IMDG Code. For

example, when the IMDG Code warns that cargo should be kept a certain temperature (e.g., 55°C (131°F)), but the specific cargo being shipped must be kept at an even lower temperature (e.g., 41°C (106°F)), the carrier may not be expected to know of the lower stowage temperature required and the shipper therefore may have a duty to inform the carrier of that specific danger. See In re DG M/V Harmony, 533 F.3d at 95-96.

The second element—the breach of the duty to warn—is a straightforward factual analysis. A shipper breaches its duty to warn when it fails to warn the carrier of dangers posed by the cargo. See id. at 96. This failure includes instances when the shipper does provide the carrier some warnings about the cargo, but the warnings are “inadequate and misleading.” Id. at 96 (internal quotation marks omitted).

To prove a claim based on a breach of a duty to warn, a claimant must prove a causal relationship between the loss and the breach of the duty. See id. “When the plaintiff alleges failure to warn, it must show that it was the defendant’s breach of duty—the failure to warn of the dangers about which the carrier could not reasonably be expected to know—that caused the harm of which plaintiff complains [T]he plaintiff must show that the warning, if given, would have impacted stowage.” Id. (internal quotation marks omitted); see also Contship Containerlines, 442 F.3d at 78 (“[L]iability for failure to warn is only appropriate if there is evidence that a warning could have altered the carrier’s actions.”).

Claims for a negligent failure to warn have been made against Deltech, Stolt, and Chemtura. The legal principles set forth above support this Court's conclusion that Chemtura did not negligently fail to warn, but that Stolt and Deltech did.

1. Chemtura

First, the Court does not find that Chemtura had a duty to warn the carrier, or anyone else involved in this action, that its DPA had been heated as part of its fill and loading process. While it is certainly true that this Court previously found that the ISO containers of DPA stored next to the DVB at NOT and aboard the *Flaminia* contributed to overall heating conditions that led to runaway polymerization and the explosion, that is not a finding that Chemtura did anything wrong. First, Chemtura properly labelled its DPA according to the IMDG Code. Its DPA was heated to a point of liquefaction but the DPA's temperature was nonetheless well below what the IMDG considers an "ETM" and what must be labelled "molten." In all events, had Chemtura labelled its containers with an ETM marker (a red thermometer) or used the term "molten" in its proper shipping name, there is insufficient evidence that this would have led to any different stowage treatment. The evidence at trial supported that the red thermometer marking is principally used to notify personnel in the event of an emergency or spill that the cargo might be hot and may burn human skin, not to inform stowage or handling decisions more broadly. Certainly there was no evidence that the use of the red

thermometer for a product designated with a correct UN number and Class (as the DPA was here) would have led it to be stowed separately from Tanks I, J, and K.

Chemtura was not under any obligation to anticipate that its cargo—which was known and expected to cool during transport—would be stowed adjacent to cargo that (from an unanticipated combination of conditions) would be particularly sensitive to any additional heat. Thus, because it was not reasonably foreseeable that the heat from the DPA would contribute to polymerization of another cargo, any heat it emitted should have been irrelevant.

In any event, even if Chemtura had a duty to warn and it failed to do so, the Court does not find that this was a proximate cause of the explosion. Chemtura could not have reasonably anticipated that Deltech would violate its own shipping policies and send its DVB out of NOT. But for this decision by Deltech, the fateful chain of events and polymerization would not have occurred. In addition, had the DVB not been loaded early, it would not have been exposed to the ambient temperatures at NOT for an extended period of time. Chemtura also could not reasonably anticipate that this mistake would have been made.

2. Stolt and Deltech

In contrast to Chemtura, Deltech and Stolt both had clear duties to warn others in the transport chain of the dangerous nature of the cargo. Both failed in carrying out this duty. With regard to Deltech, its errors were fundamental and at the beginning; they set the stage for what came next. It is certainly true that Deltech informed Stolt of the nature of the DVB—and did so extensively. But this

was not enough. It also needed to ensure that its own actions vis-à-vis particular cargo took that very same information into account each step of the way. It knew that the DVB should not be loaded aboard a vessel if its temperature exceeded 27°C (80.6°F), and considered the ISO containers sitting at NOT to continue to be within its control until stowed on the vessel. Still, it decided to ship the product out of a hot port in a warm month, and it allowed early filling. Then, it failed to effectively ensure that the necessary monitoring, including checking the temperature prior to loading, would occur. Since the Flaminia incident, Deltech has pulled shipments from a loading area when it perceived the temperature conditions to be unsafe. (ECF No. 1603, Levine Trial Test., p. 410-11.) Had the temperature been checked on June 30 or July 1 when the product was loaded, the Court is persuaded that the DVB cargo would have been pulled from the Flaminia.

For its part, Stolt's errors were manifest. It also negligently failed to warn others of the dangers of the DVB cargo. First, its processes within Stolt meant: (1) the initial population of the AS/400 database was inadequate but was relied on overly heavily; (2) Stolt personnel did not review the Deltech Booking Request adequately; (3) the communications with MSC regarding the booking were inadequate; and (4) it failed to ensure that the personnel at NOT effectively and explicitly received information necessary to handle or monitor the temperature of the cargo. Stolt knew the cargo's properties, it knew the temperature constraints, it knew that it was being loaded early and deposited in the open air under the New

Orleans sun. It also knew or should have known that the process of unloading at NOT was quick and perfunctory.

Stolt's most significant failures to warn were with regard to what it left out of the DGDs and its communications with MSC. Stolt did not take appropriate and industry accepted steps of warning MSC explicitly that the particular tanks (I, J, and K) deposited at NOT had been loaded early with a heat sensitive product that could auto-polymerize. The Court rejects the argument that under the panoply of circumstances here, MSC's prior knowledge or experience with DVB and the bills of lading (even with an MSDS attached) were effective and sufficient notice. The evidence clearly supports the DGD as the locus of critical information and warnings about the dangers of goods—Stolt's DGDs were defective.

Stolt's two primary arguments in its defense are first, that Deltech never paid for a special temperature control service, so Stolt correctly never requested such service from MSC. While it appears to be true that Deltech did not pay for a "special" temperature control service, Stolt knew enough about the product to know that all carriage of DVB requires careful consideration of temperature conditions. It was under a constant obligation to make certain that the carrier had this information in an effective manner, and it failed to do so.

Stolt's second argument is that MSC had a variety of information about the heat sensitive nature of DVB from a variety of sources—and that this fulfilled any disclosure obligation. The Court rejects that argument as a matter of fact and law. As a matter of fact, the evidence is clear that MSC is a major cargo carrier—it

cannot possibly know or intuit what is inside an ISO container, let alone the conditions to which those particular containers have been subjected. It is not tasked with associating the chemical properties it may know somewhere within its organization with a shipment of three discrete tanks. Thus, general knowledge that MSC may have had was insufficient for Stolt to rely on in fulfilling its own duty to disclose and certainly provided no basis for Stolt to avoid fulfilling its own duty of care. In addition, the references in the various bills of lading were not enough to fulfill Stolt's disclosure obligations. The evidence at trial supports the bill of lading as a transport document—essentially telling a carrier “you have x containers you must carry to a destination.” The evidence at trial does not sufficiently support use of a bill of lading to convey necessary and critical safety information about a dangerous good.⁹⁶

Stolt further argues that as the DVB cargo was labelled in conformance with the IMDG Code, its disclosure obligations were thereby met. The Court rejects this argument. The evidence at trial supports the IMDG Code as setting forth an important and required regulatory framework for carriage of dangerous goods. It by no means suggests that strict compliance with its labelling of such goods fulfills what could be a broader duty to convey additional necessary information to a

⁹⁶ The Court is not persuaded by the fact that other shippers had disclosed DVB's heat sensitivity on bills of lading; this practice does not make it an effective way to convey the information, it just suggests that these shippers have been lucky they DVB they shipped has not polymerized. There is insufficient evidence that such disclosures led to any different practices by the carrier aboard an ocean going vessel (e.g., in terms of stowage or venting).

carrier. Nothing in the IMDG Code states that a shipper and NVOCC may not provide additional information. The Court is also persuaded that when a shipper and NVOCC are shipping cargo with very particular characteristics that make temperature conditions crucial (and they have decided for financial reasons not to ship in refrigerated containers), they cannot rely on simply a general (if accurate) UN number and Class to fulfill disclosure obligations. It would be bad policy to shift the burden of compliance with full and adequate cargo disclosures onto the IMDG Code.

Thus, Stolt had a duty to disclose the particular heat sensitivities of the DVB in Tanks I, J, and K to MSC, but it did not fulfill this duty. This failure foreseeably led to auto-polymerization and an explosion. MSC did not effectively know and therefore have a chance to reject carriage of such cargo under the conditions in which it had been provided (e.g., filled early and shipped out of NOT in the summer), nor did it have the opportunity to inform the Captain and crew of the particular sensitivities of the cargo, including that this cargo might emit a smoke-like vapor cloud if auto-polymerization did occur. In short, Stolt's failure to effectively inform MSC resulted in the DVB cargo being stowed aboard the Flaminia, and the crew being blind to that fact.

D. Strict Liability for Dangerous Goods

COGSA provides that a shipper may be strictly liable when losses arise directly or indirectly from incidents relating to inflammable, explosive, or dangerous cargo. COGSA § 4(6); see also Senator Linie GmbH & Co. KG v Sunway Line, Inc.,

291 F.3d 145, 168 (2d Cir. 2002) (COGSA § 4(6) “by its plain meaning, does not imply a shipper scienter requirement.”); id. at 169 (“the strict-liability rule of [COGSA § 4(6)] supersedes . . . maritime common law”). Such liability is limited, however, to instances in which the carrier does not know that a particular cargo is in fact dangerous. See In re DG M/V Harmony, 533 F.3d at 92.

“[W]hen neither the shipper nor the carrier had actual or constructive pre-shipment knowledge of the goods’ dangerous nature,” the shipper of the goods is strictly liable for the loss caused by the shipment of dangerous good. Id. (quoting Senator Linie GmbH, 291 F.3d at 148). Imposition of strict liability advantages the carrier at the expense of the shipper. It is logical, therefore, that a carrier cannot invoke strict liability if it knows that a cargo poses a danger and requires careful handling or stowage. Id. at 93 (quoting Contship Containerlines, 442 F.3d at 77.

If the carrier knows the substance being shipped is “an unstable substance that [becomes] vulnerable to combustion when heated,” the carrier cannot prevail against the shipper on a strict liability theory under COGSA. Id. The limitation on the shipper’s strict liability based on the carrier’s knowledge applies to claims brought against the shipper by third parties as well. Id. at 93-94. The lack of knowledge by the carrier requirement “applies to any strict liability claim brought under § 4(6), whether those claims are brought by carriers or by third-party cargo owners.” Id. at 94. That is because Section 4(6) “makes shippers strictly liable for damages caused by dangerous goods only when ‘the carrier . . . has not consented

with knowledge' of their dangerousness," a standard that does not change based on who the claimant is. Id. (quoting COGSA § 4(6)).

In this case, MSC has asserted strict liability claims against Deltech and Stolt. Those two entities respond that MSC had such a wealth of knowledge about DVB that it cannot meet the standard for entitlement to this claim. The Court is persuaded otherwise.

As discussed above, an initial and independently dispositive matter, MSC could not reasonably have known that Tanks I, J, and K had been exposed to particular conditions such as (1) being shipped out of NOT at a time of the year when Deltech had determined it was dangerous to do so, and (2) having been loaded early and sitting stagnant at NOT in the hot New Orleans sun longer than appropriate. MSC certainly had no obligation to have its own system identify the first issue, and it would be a strange burden shifting to make it responsible for the second. Thus, the Court finds that MSC did not have sufficient and relevant information about the stability of the particular DVB cargo in Tanks I, J, and K.

In addition, for the same reasons as those set forth in the immediately preceding section, the Court does not find that generalized knowledge regarding a type of cargo adequately informs a large carrier such as MSC of the particular contents and chemical sensitivities of cargo in specific containers to be loaded aboard its vessel. The DGDs should have contained sufficient information to warn MSC here, but they did not.

E. The Fire Defenses

NSB and Conti have asserted two “fire defenses”: one under the Limitations Act and the other under COGSA. While the Court has not assigned NSB and Conti legal fault, so these defenses are irrelevant, because all of the facts have otherwise been found to support the defenses, the Court addresses them in any event.

The COGSA Fire Exemption states that “[n]either the carrier nor the ship shall be responsible for loss or damage arising from . . . [f]ire, unless caused by the actual fault or privity of the carrier.” COGSA § (4)(2)(b). COGSA § 4(2)(q), referred to as the “q Clause” states that “the burden of proof shall be on the person claiming the benefit of this exception to show that neither the actual fault or privity of the carrier nor the fault or neglect of the agents or servant of the carrier contributed to the loss or damage.” COGSA § 4(2)(q). In re Ta Chi Navigation (Panama) Corp., S.A., 677 F.2d 225 (2d Cir. 1982), sets forth a five step process to analyze a carrier’s defense under the Fire Exemption: (1) the shipper must establish its prima facie case that the cargo was damaged while in the carrier’s custody, (2) the burden then shifts to the carrier to establish that the damage arose from a fire, (3) the burden then shifts back to the shipper to show the cause of the fire, (4) the shipper must then establish that this cause was due to the “actual fault or privity of the carrier,” and (5) the burden then shifts back to the carrier to show the extent to which any of the damage is not attributable to its negligence. Id. at 227-28.

Based on the facts found above, the explosion aboard the *Flaminia* was not due to actual fault on the part of MSC.⁹⁷ Thus, MSC, along with Conti and NSB, are entitled to this defense.

Similarly, the Limitation of a Shipowner's Liability Act contains a "fire statute" that provides:

The owner of a vessel is not liable for loss or damage to merchandise on the vessel caused by a fire on the vessel unless the fire resulted from the neglect of the owner.

46 U.S.C. § 30504 (2006). As the Court has found that the fire here did not result from the neglect of Conti, as discussed above, this defense is available to it.⁹⁸

F. Breach of Contract

There are two contracts that form the basis of the parties' breach of contract claims in this litigation:

- BDP's Logistics Alliance Agreement between Stolt and BDP, which forms the basis of Stolt's breach of contract claim against BDP;
- MSC's Sea Waybills, which form the basis of MSC's contractual claim against Stolt and Deltech and Conti's General Average claim.

⁹⁷ MSC's Sea Waybills issued to Stolt contained a term referred to as a "Clause Paramount" that made COGSA applicable as a matter of contract between Stolt and MSC throughout the entire time that the DVB was in MSC's custody. (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 6.1); ECF No. 975-8, PX 258 (same).)

⁹⁸ As set forth in the findings above, the vessel was manned with properly-credentialed officers and crew, they were properly familiarized with the operation of the firefighting systems, appliances and equipment, and the officers and crew were properly drilled and trained in shipboard firefighting. In addition, the Court does not find that defects or deficiencies in the CO₂ system or its installation were responsible for the loss, nor that a failure to vent or the opening of the manlid was a fault.

(See ECF No. 1553, p. 2-5.)

As to the latter, it is important to begin by providing additional context. First, MSC and Stolt initially and separately entered a Service Contract that governed the DVB shipments at issue in this case. However, Clause 9(a) of the Service Contract specifically contemplates a carrier's (MSC's) use of sea waybills and incorporates by reference the terms of any such bills into the Service Contract. (ECF No 1475-1, DX 468 cl. 9(a).)

A sea waybill is a contract of carriage but unlike a bill of lading, is non-negotiable. See Royal & SunAlliance Ins., PLC v. Ocean World Lines, Inc., 612 F.3d 138, 141 n.3. & n.5 (2d Cir. 2010); Mitsui Sumitomo Ins. Co., Ltd. v. Evergreen Marine Corp., 621 F.3d 215, 216 n.1 (2d Cir. 2010); Thomas J. Schoenbaum, Admiralty & Maritime Law § 10-11 (5th ed. 2017). The operative Sea Waybills here identify MSC as the carrier, Stolt "on behalf of" or "as agents for" Deltech as the shipper, and Stolt as the consignee. (ECF No. 1493-43, DXs 476 (Final Sea Waybill for Tank I), 477 (for Tank J), 478 (for Tank K); see also ECF No. 975-4, PX 254 (Sea Waybill).⁹⁹) And under the bills' definition sections, both Deltech and Stolt are classified as merchants. (Id. at Cl. 1.)

While each of the Sea Waybills provide that it is "the final contract between the parties," they make an exception for cases where the Sea Waybill has been issued pursuant to another contract between the merchant and carrier. In such

⁹⁹ PX 254 is an enlarged copy of the terms and conditions that governed the Sea Waybills at issue here.

cases, the Sea Waybill should be construed together with the other contract, or in this case, the Service Contract. (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 23).)

Basic principles of contract law apply to these contracts. First, as to the Sea Waybills, maritime contracts are construed “like any other contracts: by their terms and consistent with the intent of the parties.” Norfolk S. Ry. Co. v. Kirby, 543 U.S. 14, 31 (2004). “[I]n order to establish a claim for breach of contract, a plaintiff must prove, by a preponderance of the evidence, (1) the existence of a contract between itself and that defendant, (2) performance of the plaintiff’s obligations under the contract, (3) breach of the contract, and (4) damages to the plaintiff caused by the defendant’s breach.” OOCL (USA) Inc. v. Transco Shipping Corp., No. 13-cv-5418, 2015 WL 9460565, at *4 (S.D.N.Y. Dec. 23, 2015) (applying admiralty law) (citation omitted).

Under that law, when “maritime law is silent” on the relevant issue, courts turn to state law principles to fill in the gaps. Williamson v. Recovery Ltd. P’ship, 542 F.3d 43, 49 (2d Cir. 2008) (“[O]nce a contract has been deemed a maritime contract, the next step is determining whether a specific state’s laws should be used to supplement any area of contract law for which federal common law does not provide.”); Guarascio v. Drake Assoc. Inc., 582 F. Supp. 2d 459, 462 n.1 (S.D.N.Y. 2008).

Here, the contracts are, by their terms, governed by New York law. The Service Contract provides that it shall be subject to the Shipping Act of 1984, as amended by the ocean Shipping Reform Act of 1998, and that it “shall otherwise be

construed and governed by the laws of the State of New York.” (ECF No. 1475-1, DX 468 cl. 9(d).) Similarly, this Court previously determined that the contract between Stolt and BDP is governed by New York law. Flaminia Stolt/BDP Opinion, 2017 WL 3738726, at *4.

To sustain a claim for breach of contract, New York law requires the following three elements: (1) the existence of a contract; (2) breach; and (3) damages resulting from, or caused by, that breach. Diesel Props. S.r.l. v. Greystone Bus. Credit II LLC, 631 F.3d 42, 52 (2d Cir. 2011); Nat’l Market Share, Inc. v. Sterling Nat’l Bank, 392 F.3d 520, 525 (2d Cir. 2004). A breach is a proximate cause of damages if it is a substantial factor in producing those damages. Point Prods. A.G. v. Sony Music Entm’t Inc., 215 F. Supp. 2d 336, 344 (S.D.N.Y. 2002).

1. Stolt’s Breach of Contract Claim Against BDP

The Court has previously found that Stolt and BDP had entered into a Logistics Alliance Agreement that provides that BDP would perform certain document processing duties in connection with its customer’s assignments. Flaminia Stolt/BDP Opinion, 2017 WL 3738726, at *3. Proper and adequate performance of such duties is implicit in that agreement; accordingly, BDP’s failure to notice the omission of the heat warning from the Master Bill of Lading amounts to a breach of that duty. Id. at *6.

At summary judgment, Stolt asserted two types of damages arising from this breach: (1) improper stowage of the DVB80 and, by extension, the damage caused by the explosion and (2) deprivation of a defense that Stolt might have vis-à-vis

other parties. Id. This Court rejected the first type at summary judgment, finding that there was no evidentiary basis to conclude that the omission of the heat warning contributed to what happened on the vessel. However, the Court allowed Stolt's breach of contract claim to proceed to trial on the second theory of damages, providing Stolt with an opportunity to produce evidence of these damages at trial.

Following trial, the Court finds that Stolt has not produced sufficient evidence of damages by this breach. Specifically, Stolt failed to establish that the heat warning's inclusion would have provided it with a complete, or even partial, defense to the claims brought against it by other parties. The Court has found that the Sea Waybills were not used by MSC to decide where to stow on the vessel or how to physically handle the goods. Therefore, any breach of contract claim brought by Stolt against MSC for failure to store the DVB80 above deck would fail at the breach stage because this is insufficient evidence that had that language been preserved, MSC here would have acted differently or had different legal responsibilities to do so.

Accordingly, BDP did not deprive Stolt of any real defense.

2. MSC's Breach of Contract Claims Against Stolt and Deltech

As a threshold matter, since Deltech and Stolt each qualify as a "Merchant" under the Sea Waybills, they are both "jointly and severally liable toward the Carrier [MSC] for all the various undertakings, responsibilities and liabilities of the Merchant under or in connection with this Sea Waybill." (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 2).) Here, MSC has brought claims against Stolt and Deltech for

breach of the Sea Waybills. Specifically, MSC has alleged that Stolt and Deltech breached Clauses 11, 14, and 15. (ECF No. 125, MSC's Answer with Countercls. Against Stolt Tank Containers B.V. and Deltech Corp. ¶¶ 24-32.)

These claims appear entirely directed at MSC's claim for indemnification. Indeed, in both their pre- and post-trial submissions, MSC's arguments on these provisions all revolve around their entitlement to indemnification from Stolt and Deltech based on corresponding indemnification clauses. Therefore, the Court analyzes MSC's breach of contract claims in conjunction with its request for indemnification, discussed below.

3. Conti's General Average Claims

Clause 22 of the Sea Waybills provides that that the "merchant," which, as discussed above, includes both Stolt and Deltech, must contribute with the carrier in General Average for the payment of any sacrifices, losses or expenses of a General Average nature that may have been incurred. More specifically, Clause 22 states:

In the event of accident, danger, damage or disaster, before or after commencement of the voyage resulting from any cause whatsoever, whether due to negligence or not, for which, or for the consequence of which, the Carrier is not responsible by statute, contract, or otherwise, the Goods and the Merchant shall, jointly and severally, contribute with the Carrier in General Average to the payment of any sacrifices, losses, or expenses of a General Average nature that may be made or incurred.

(ECF No. 975-4, PX 254 (Sea Waybill, Cl. 22).) Accordingly, as a matter of basic contract law, Conti may recover General Average contribution as to be determined by an independent General Adjuster, as prescribed by the contract. (Id.)

G. Contribution and Indemnification

The parties have made claims for contribution and indemnification with regard to liability that may be assessed against them. As the Court has found only Deltech and Stolt liable in tort, many of these claims are now moot, and others are not yet ripe for the Court to decide.¹⁰⁰ There are, however, open questions of contribution as between Deltech and Stolt, as well as claims for indemnification for cargo and non-cargo claims with respect to MSC, Conti, and NSB. For these reasons, some rulings here are relevant.

In admiralty cases, the liability of joint tortfeasors is shared in proportion to their fault. In Otal Investments Ltd. v. M/V Clary, the Second Circuit held that:

when two or more parties have contributed by their fault to cause property damage in a maritime collision . . . , liability for such damage is to be allocated among the parties proportionately to the comparative degree of their fault, and that liability for such damages is to be allocated equally only

¹⁰⁰ For example, the Court understands that Chemtura's arguments with respect to indemnification and contribution are now moot. Although Cargo Claimants filed claims against both Stolt and Chemtura for damages to cargo and property (see ECF Nos. 154, 520), Stolt negotiated a settlement on these claims that included a release by Cargo Claimants of all other defendants, including Chemtura (see ECF No. 1243, Letter from Stolt to the Court; ECF No. 1254, Rule 56.1 Statement ¶ 15). Chemtura disputed Stolt's settlement to the extent Stolt claimed it gave rise to a contribution claim against Chemtura. (ECF No. 1256, Br. in Support of Motion for Partial Summary Judgment.) As discussed in more detail below, however, a claim for contribution can only arise between joint tortfeasors. See Otal Investments Ltd. v. M/V Clary, 673 F.3d 108, 113 (2d Cir. 2012) (per curiam). Because the Court has not found Chemtura liable in tort, Stolt cannot succeed on its claims for contribution and the dispute is now moot.

when the parties are equally at fault or when it is not possible fairly to measure the comparative degree of their fault.

673 F.3d 108, 113 (2d Cir. 2012) (per curiam) (quoting United States v. Reliable Transfer Co., 421 U.S. 397, 411 (1975)) (internal quotation marks omitted). In such cases, a party may bring an action for contribution up to the limit of its own liability. Lubrano v. Waterman Steamship Co., 175 F.3d 274, 278 (2d Cir. 1999) (citing Cooper Stevedoring Co. v. Fritz Kopke, Inc., 417 U.S. 106, 111-13 (1974)). The allocation of liability (which determines the parties' respective contributions) is a finding of fact. Id.

In contrast to contribution, indemnification shifts the entire loss from one party to another. Schoenbaum, Admiralty & Maritime Law § 5-19. In admiralty cases, indemnification may be based on tort, contract, or the relationship of the parties ("Ryan indemnity"). Id. In maritime cases, a claim for indemnity may also be based on COGSA. See COGSA § 3(5).¹⁰¹

In admiralty contracts, indemnification clauses are interpreted according to federal maritime law (with New York law to supplement), and ambiguity in such clauses are strictly construed against the drafter. Schoenbaum, Admiralty &

¹⁰¹ Clause 6 of the MSC Sea Waybills expressly incorporates the provisions of COGSA for as long as the goods remained in the custody of MSC or its subcontractors. (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 6.1); ECF No. 975-8, PX 258 (same).) Under COGSA, a shipper "shall be deemed to have guaranteed to the carrier the accuracy at the time of shipment of the marks, number, quantity, and weight, as furnished by him; and the shipper shall indemnify the carrier against all loss, damages, and expenses arising or resulting from inaccuracies in such particulars." COGSA § 3(5). However, because the Court agrees with MSC's claims for contract indemnity, the Court need not address indemnification separately under COGSA.

Maritime Law § 5-21. Indemnification for consequences resulting from an indemnitee's own negligence, as with indemnification for strict liability, must be expressly included in the contract. Id.; see also A/S J Ludwig Mowinckels Rederi v. Commercial Stevedoring Co., 256 F.2d 227, 231, 231 n.2 (“[C]ontracts will not be construed to indemnify a person against his own negligence unless such intention is expressed in unequivocal terms” (quoting Rice v. Penn. R.R. Co., 202 F.2d 861, 862 (2d Cir. 1953))). An express contractual indemnification clause, therefore, will defeat an action for contribution among joint tortfeasors.

Express warranties may also give rise to a right to indemnification in maritime law. As Judge Learned Hand explained in Metro. Coal Co. v. Howard, “A warranty is an assurance by one party to a contract of the existence of a fact upon which the other party may rely.” 155 F.2d 780, 784 (2d Cir. 1946). Ultimately, a warranty “amounts to a promise to indemnify the promisee for any loss if the fact warranted proves untrue.” Id.

In the absence of an express contractual indemnity, tort indemnity may be imposed as a matter of equity. “Indemnity rests upon the principle that the true wrongdoer should bear the ultimate burden of payment.” Ingersoll Milling Machine Co. v. M/V BODENA, 829 F.2d 293, 305 (2d Cir. 1987). Following the Supreme Court’s decision in Reliable Transfer, 421 U.S. 397, however, tort indemnity has been “limited to cases where a non-negligent or vicariously liable tortfeasor is entitled to indemnity from a person who is guilty of actual fault.” Schoenbaum,

Admiralty & Maritime Law § 5-19. Tort indemnity is therefore inappropriate where both claimants share significant liability.

The Court finds that MSC, along with its subcontractors Conti and NSB, are entitled to full indemnification from Stolt and Deltech based on the express terms of the Sea Waybills. Several warranty and indemnification clauses compel this result, including Clauses 14 and 15. Because the Court finds that Clause 15 fully resolves the issues, the Court need not address in detail the basis for indemnification under Clause 14.¹⁰²

Clause 15 of the Sea Waybills includes two promises by the Merchant (here, Stolt and Deltech¹⁰³). Under Clause 15.1, “When the Merchant delivers Goods of a dangerous or hazardous nature to the Carrier, the Merchant shall fully inform the

¹⁰² Under Clause 14:

The Merchant also warrants that . . . any hazardous or potentially dangerous characteristics of the Goods have been fully disclosed by or on behalf of the Merchant and that they will not cause loss, damage or expense to the Carrier, or to any other cargo, Containers, Vessel or Person during the carriage.

(ECF No. 975-4, PX 254 (Sea Waybill, Cl. 14.4); ECF No. 975-8, PX 258 (same).) Like other express warranties, Clause 14 ultimately “amounts to a promise to indemnify the promisee for any loss if the fact warranted proves untrue.” See Metro. Coal, 155 F.2d at 784 (2d Cir. 1946). For the same reasons discussed in the context of Clause 15, the Court finds that Deltech and Stolt failed to “fully disclose[]” the “hazardous or potentially dangerous characteristics” of the DBV. (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 14.4); ECF No. 975-8, PX 258 (same).) Due to the breach of this warranty, the contract principles described in Metro Coal require Deltech and Stolt to indemnify MSC for the “loss, damage, or expense to the Carrier, or to any other cargo, Containers, Vessel or Person during the carriage.” (Id.)

¹⁰³ Under Clause 1, the term “Merchant . . . includes the Shipper, consignee, holder of this Sea Waybill, the receiver of the Goods and any person owning, entitled to or claiming the possession of the Goods or of this Sea Waybill or anyone acting on behalf of this person.” (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 1); ECF No. 975-8, PX 258 (same).)

Carrier in writing of the precise and accurate details of the Goods, and special precautions or handling required for the Goods.” (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 15.1); ECF No. 975-8, PX 258 (same).) Under Clause 15.2, the Merchant agrees to indemnify the Carrier for damages arising from the transport of such goods. Section 15.2 states, in its entirety:

The Merchant shall be fully liable for and shall indemnify, hold harmless and defend the Carrier, its servants, agents and subcontractors and any third all loss, damage, delay, personal injury, death or expenses including fines and penalties, and all reasonable legal expenses and costs caused to the Carrier, the Vessel, any cargo, and other property, whether on board or ashore, arising from such [dangerous or hazardous] Goods and/or from the breach of clause 15.1, whether or not the Merchant was aware of the nature of such Goods.

(Id. at Cl. 15.2.)

These so-called “dangerous goods clauses” are common and enforceable in the industry. See Luckenbach S.S. Co. v. Coast Mfg. & Supply Co., 185 F. Supp. 910, 913 n.1 (quoting a similar contractual term enforceable in maritime context). They also align with obligations set forth in the regulatory scheme. For example, under SOLAS (as discussed above), shippers are required to provide appropriate information—including “any relevant special properties of the cargo”—to the carrier sufficiently in advance of loading to ensure the necessary precautions can be put into effect. SOLAS, Ch. IV, Regs. 2.1, 2.2.1. As noted above, the DGD typically satisfies these requirements. (ECF No. 1484, Daum Trial Decl., p. 8 ¶ 35; ECF No. 1489, Ahlborn Trial Decl., p. 15 ¶ 58.)

The Court finds that because Deltech breached Clause 15.1, MSC, along with its subcontractors Conti, and NSB,¹⁰⁴ are entitled to indemnity under Clause 15.2. As discussed in greater detail above, Deltech knew that DVB should not be loaded aboard a vessel if its temperature exceeded 27°C (80.6°F). Nonetheless, Deltech allowed for shipping out of New Orleans and early filling, and failed to inform those at NOT of the need to check the temperature prior to loading. By the plain terms of the Sea Waybills, this omission constitutes a failure to “fully inform” MSC (itself and through NOT) of the “precise and accurate” details regarding the DVB and the “special precautions” required to handle it.¹⁰⁵ Under Clause 15.2, Deltech must therefore indemnify MSC, Conti, and NSB for all loss, damages, expenses, and costs “caused to the Carrier, the Vessel, any cargo, and other property, whether on board or ashore, arising from . . . the breach of clause 15.1.” (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 15.2); ECF No. 975-8, PX 258 (same).)

¹⁰⁴ Under Clause 1, the term “Subcontractor,” as it is used in Clause 15.2, “includes but is not limited to the owners, charterers and operators of the Vessel(s) other than the Carrier.” (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 1).) As described above, Conti is the owner of the Flaminia vessel and NSB is the operator contracted to manage the ship.

¹⁰⁵ Although the second sentence of Clause 15.1 requires markings to “comply with the requirements of any applicable regulations” (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 15.1)), the Court does not find that Deltech and Stolt so complied. By contrast, Deltech’s failure to include a warning to check the temperature of the DBV before loading clearly violates applicable regulations, including SOLAS. See SOLAS, Ch. IV, Reg. 2.2.1. Even if that were not the case, compliance with applicable regulations would not discharge the independent obligation set forth in the first sentence of Clause 15.1, which requires the Merchant to “fully inform” the Carrier with “precise and accurate details of the Goods, and any special precautions or handling required for the Goods.” (ECF No. 975-4, PX 254 (Sea Waybill, Cl. 15.1).) That obligation was not satisfied here.

Stolt is in a similar position. As discussed above, Stolt failed to take appropriate steps to warn MSC that (1) it had loaded Tanks I, J, and K early, (2) they delivered to NOT tanks filled with DVB that would auto-polymerize, and (3) deposited them onto the ground in the terminal yard to sit stagnant until vessel departure. Although certain heat warnings were provided in the Master Bill of Lading Instructions¹⁰⁶ and the MSDS ((ECF No. 1493-15, DXs 469-471 (Master Bill of Lading Instructions); ECF No. 1485-39, DX 46 (MSDS))), critical details regarding the risk of DVB auto-polymerization were not included on the Final DGDs that Stolt sent to MSC (ECF No. 1479-3, PXs 265, 266, 267). As the Court found above, carriers in the industry and MSC in particular customarily rely on the DGD—not Master Bill of Lading Instructions or the MSDS—when determining whether to accept dangerous goods. (ECF No. 1489, Ahlborn Trial Decl., p. 19 ¶¶ 65-66.) Because Stolt omitted these details from the DVB, it breached its obligations to “fully inform” MSC of the nature of DVB and the precautions required to safely ship it. (See ECF No. 975-4, PX 254 (Sea Waybill, Cl. 15.1); ECF No. 975-8, PX 258 (same).) Like Deltech, Stolt must therefore indemnify MSC, Conti, and NSB for all loss, damages, expenses, and costs arising from the breach of Clause 15.1.

¹⁰⁶ As discussed above, the Master of Bill of Lading Instructions included the following heat warning: “DO NOT STOW NEAR HEAT SOURCES. STOW ABOVE DECK FOR TEMPERATURE MONITORING.” (ECF No. 1493-15, DXs 469-471 (Master Bill of Lading Instructions).) MSC relied on the Master Bill of Lading Instructions to generate its Sea Waybills, but did not include the heat warnings that BDP/Stolt had provided.

Even if Clause 15.1 were not breached by Deltech and Stolt, the text of Clause 15.2 does not require a breach to trigger a Merchant's obligation to indemnify the Carrier and its subcontractors. In fact, the penultimate phrase in Clause 15.2 requires the Merchant to indemnify the Carrier and its subcontractors from any damage "arising from such [dangerous or hazardous] Goods and/or from the breach of clause 15.1." (*Id.* at Cl. 15.2 (emphasis added).) The use of "and/or" clearly indicates the parties' intention to allow a claim for indemnification to arise absent a breach of Clause 15.1. See In re Matco-Norca, Inc., 22 A.D. 3d 495, 496 (N.Y. App. Div. 2005) ("[W]hen the terms of a written contract are clear and unambiguous, the intent of the parties must be found within the four corners of the contract."). The appropriate construction of Clauses 15.1 and 15.2 of the Sea Waybills, therefore, is simply this: "When the Merchant delivers Goods of a dangerous or hazardous nature to the Carrier, its servants, agents and subcontractors . . . , [t]he Merchant shall be fully liable for and shall indemnify, hold harmless and defend the Carrier . . . all loss, damage, [etc.] arising from such Goods."¹⁰⁷ (ECF No. 975-4, PX 254 (Sea Waybill, Cls. 15.1, 15.2); ECF No. 975-8, PX 258 (same).)

¹⁰⁷ MSC also asserted claims for indemnification against Chemtura under an identical Sea Waybill. (ECF No. 305, Crossclaims against Chemtura Corp., p. 6-8 ¶ 31-37.) The Court has concluded that Chemtura did not breach its duty to warn and the damage did not arise from the DPA cargo, thus eliminating MSC's claims under Clauses 11, 14, and 15. (ECF No. 975-4, PX 254 (Sea Waybill, Cls. 11.4, 14.4, 14.6, 15.1, 15.2); ECF No. 975-8, PX 258 (same).)

To the extent Stolt and Deltech assert that the Sea Waybills do not address non-cargo damages, such as to the vessel itself, the Court disagrees. The terms of the Sea Waybills expressly include indemnification all losses “caused to the Carrier, the Vessel, any cargo, and other property, whether on board or ashore.” (Id. at Cl. 15.2; see also id. at Cl. 11.4 (including “damage to Container, other cargo and the Vessel”).) The language of Clause 15.2 expressly includes non-cargo damages, including the “Vessel” and “other property” other than cargo. (See id. at Cls. 14, 15.2.)

With respect to claims for contribution and indemnity between Deltech and Stolt, they appear to have settled their issues in an agreement presented at trial. But other than that, no express contract controls. Moreover, the Court’s relatively equal apportionment of liability—55% and 45%, respectively—precludes either party from prevailing on a claim for indemnity based in tort or another equitable theory. Instead, Stolt and Deltech’s respective liability to MSC shall be apportioned according to their fault, and each party may bring an action for contribution accordingly.

Finally, NSB and Conti are protected through what is essentially equivalent to a right to indemnification in another provision of the Sea Waybills. Clause 4.2 of the MSC Sea Waybills also had what is referred to as a “Himalaya Clause,” which extended certain COGSA limitations and protections to MSC’s agents and subcontractors, such as NSB and Conti. Mikinberg, 988 F.2d at 332. Under Clause 4.2, Deltech and Stolt agreed that “no claim . . . shall be made against any servant,

agent, or Subcontractor of the Carrier” and that “every such servant, agent and Subcontractor shall have the benefit of all terms and conditions . . . benefiting the Carrier,” including the COGSA protections incorporated via Clause 6.1. (ECF No. 975-4, PX 254 (Sea Waybill, Cls. 4.2, 6.1); ECF No. 975-8, PX 258 (same).)

VI. CONCLUSION

Liability in this matter is determined as set forth above.

As agreed at the Final Pre-Trial Conference, the parties are ordered to participate in mediation in an attempt to resolve all remaining issues in this case, including the quantum of damages. To this end, the parties are ordered within 45 days of this Opinion & Order to meet and confer and then to provide the Court with their proposed process and timeframe for non-binding mediation.

SO ORDERED.

Dated: New York, New York
September 10, 2018



KATHERINE B. FORREST
United States District Judge